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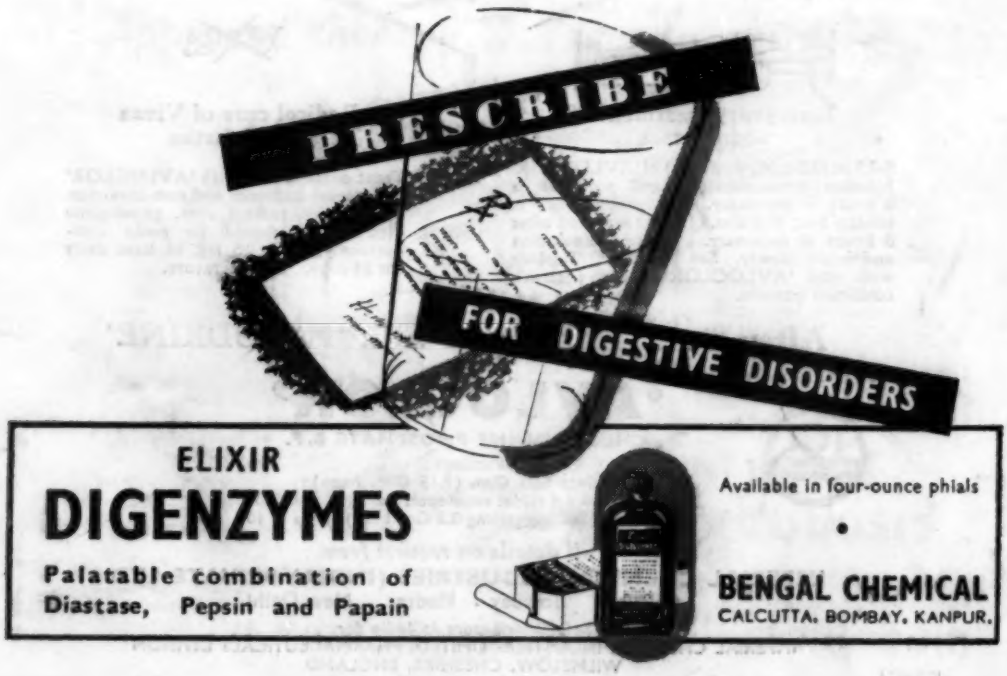

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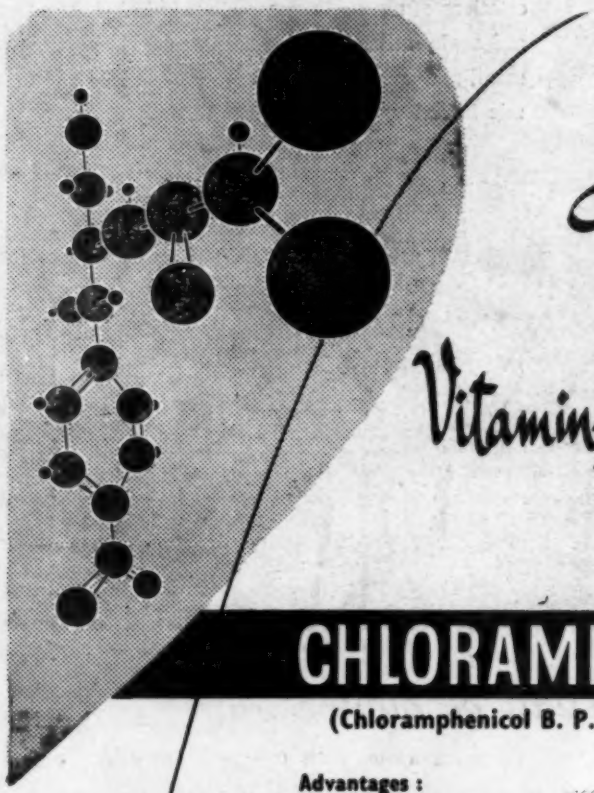

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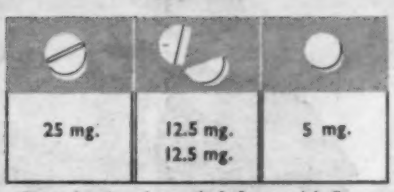

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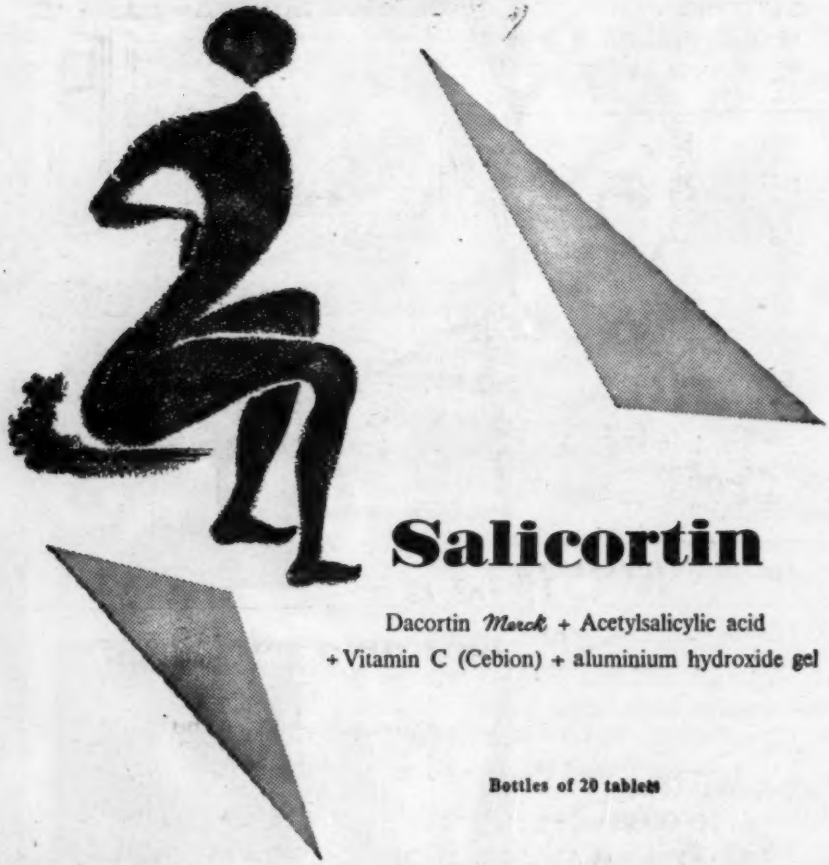

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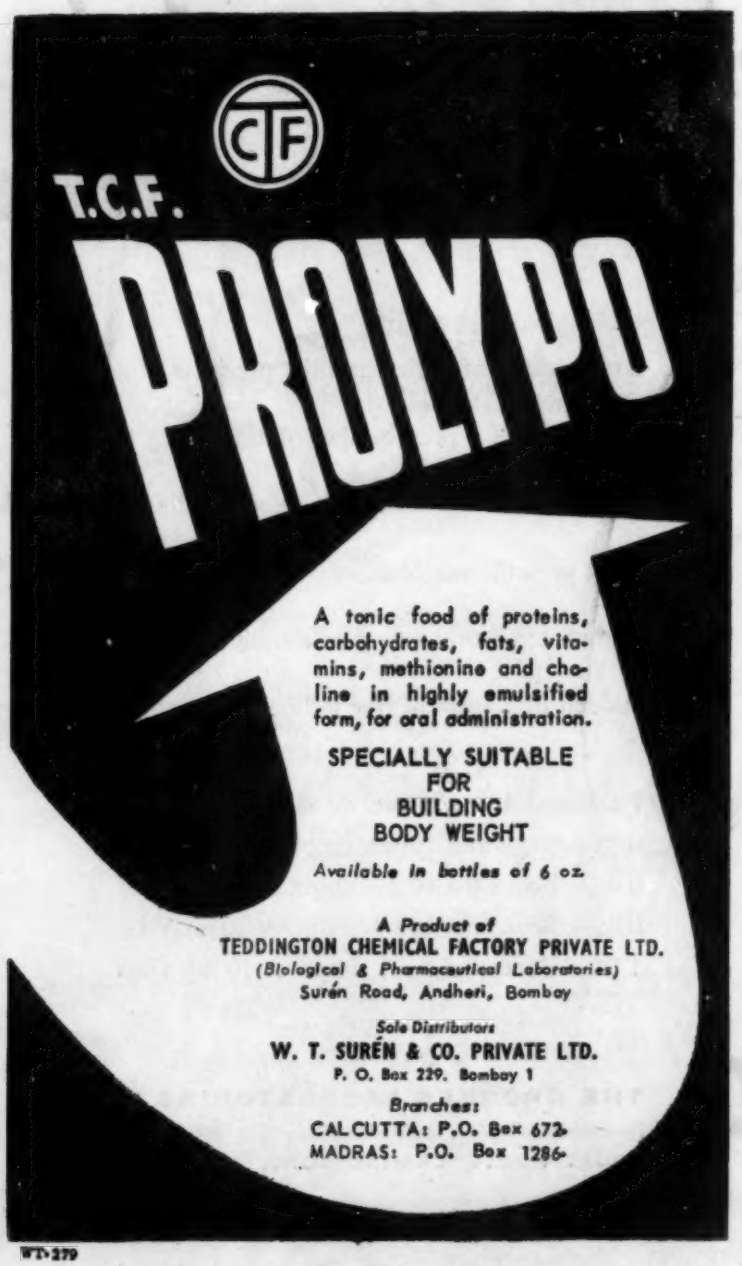
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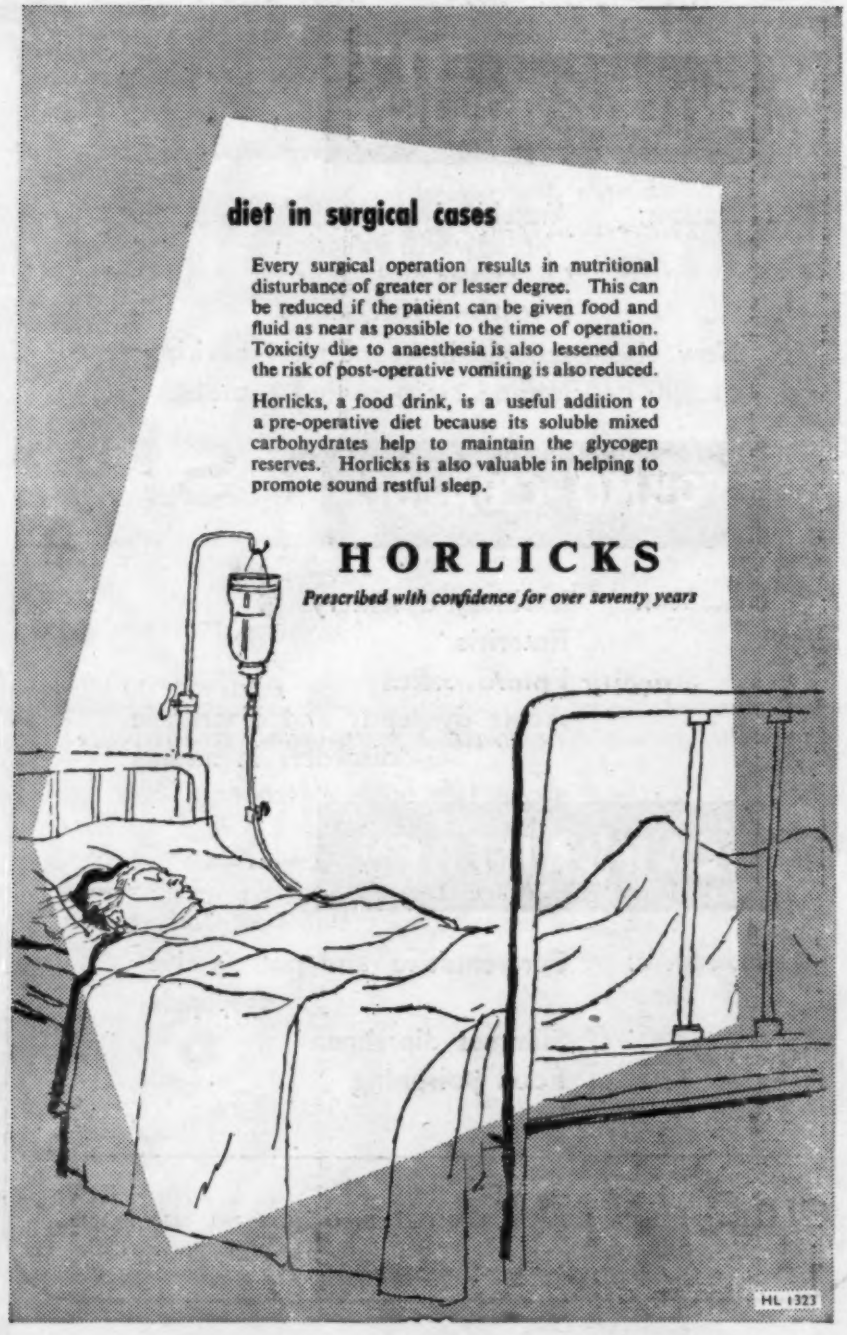
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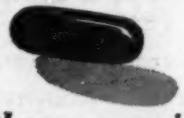

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CALCUTTA
AUGUST 16, 1957

ORIGINAL ARTICLES

STUDIES ON THE ROLE OF ADRENAL CORTEX IN EXPERIMENTAL AND HUMAN LIVER DISEASE

P. N. WAHI, M.D., M.R.C.P., F.N.I., S. RAMACHANDRAN, M.A., M.SC.
AND
H. NAVANI, M.D.

Liver Diseases Research Unit (I. C. M. R.), Department of Pathology, S. N. Medical College, Agra

The recognition of the importance of the adrenal cortex in normal physiology and in the ability of the body to withstand stressful situations has led to numerous studies on the role of this endocrine gland in the pathogenesis of various diseases. This is particularly true in the case of diseases of the liver where the several studies carried out so far have provided suggestive evidence that the adrenal cortex might be variously involved in their pathogenesis although its exact role still remains to be elucidated. Selye (1950) has shown that chronic stress can lead to adrenal damage and to the development of cirrhosis in experimental animals. Reports in the literature indicate that the adrenal cortical hormones may exert a profound influence on the development of various morphological abnormalities in the liver such as fatty liver, cirrhosis and malignancy. *Vice versa* the liver also plays a vital role in the intermediary metabolism of these hormones and in the maintenance of steroid hormone homeostasis. However, due to the unsatisfactory experimental procedures employed and the lack of specific methods of quantitative adrenal hormone assay, little light has been thrown so far, on the problem of adrenal cortical function in experimental and human liver disease.

REVIEW OF LITERATURE

Studies of salt and water balance in patients with liver disease have shown the presence of marked abnormalities characterised by extreme renal retention with low values of serum sodium. Low saliva and sweat sodium are also found, suggesting a mechanism of generalised retention (Eisenmenger *et al*, 1950 ; Bongiovanni, 1955). The 'salt-active' hormones of the adrenal cortex (aldosterone, desoxycorticosterone) are known to regulate the renal tubular reabsorption of these constituents. Observations such as these suggest abnormalities in the metabolism of these adrenal hormones. Recently a number of reports of increased urinary aldosterone excretion in clinical cases of portal cirrhosis with ascites have appeared in the literature (Chart and Shipley, 1953 ; Leutscher, 1954 ; Pechet *et al*, 1954) indicating excessive adrenal secretion of this hormone or impaired destruction of this by the damaged liver.

Urinary phosphomolybdate—reducing corticoids, which at times have also been designated 'neutral reducing lipids', were found to be increased in 6 subjects with portal cirrhosis studied by Shadaksharappa *et al* (1951) and it was believed by these authors that these phosphomolybdate-reducing substances are a sensitive index of adrenal cortical activity. Bongiovanni and Eisenmenger (1951) in a study of a group of patients with portal cirrhosis, biliary cirrhosis and an undetermined type of cirrhosis have found an elevated urinary excretion of corticoids. Peterson *et al* (1954) have reported increased urinary excretion of 'formaldehydogenic steroids' in the

cases of portal cirrhosis and infectious hepatitis studied by them. On the other hand, in another study, Talbot *et al* (1951) have observed urinary water-soluble corticoids to be grossly normal in patients with cirrhosis. The same group also reported occasional normal values for patients with Addison's disease. In this study the technique employed was based on the reducing properties of the corticoids with respect to the copper reagent. Goldman and Bassett (1952) have reported diminished urinary corticoid excretion in some of the cases of cirrhosis studied by them. It should be emphasised that the reactions involved in these techniques in the studies quoted above are not specific for adrenal corticoids but are also given by a number of other compounds.

Recently Reddy *et al* (1952) have devised a rather specific technique for urinary 17-hydroxycorticosteroid estimation. Brown *et al* (1954) employing this method, have found diminished urinary excretion of these compounds in patients with cirrhosis and infectious hepatitis, and this in presence of normal fasting levels of blood 17-hydroxycorticosteroids was taken as indicative of decreased adrenal activity in liver disease.

Several metabolic studies have been carried out in human subjects with liver disease in an attempt to determine the adrenal cortical response to stimulation by ACTH. Brown *et al* (1954) have observed normal rise in plasma levels of 17-hydroxycorticosteroid in response to a six-hour intravenous ACTH infusion in patients with liver disease. The removal of infused 17-hydroxycorticosterone (hydrocortisone), however, was impaired in these patients and was inversely proportional to the degree of liver damage as determined by BSP retention. Peterson *et al* (1954) have similarly reported that response of the adrenals to stimulation by ACTH in cirrhosis patients does not differ significantly from that of normal subjects.

Urinary 17-ketosteroids have been reported to be markedly diminished in patients with cirrhosis and infectious hepatitis (Dohan *et al*, 1952 ; Gilder and Hoagland, 1946 ; Samuels, 1949). In men approximately two-thirds of the total 17-ketosteroid excretion represents metabolites of adrenal corticoids and the rest are derived from the testicular hormones, while in women all of it is of adrenal origin. The diminished 17-ketosteroid excretion may reflect both decreased secretion of the hormones from the adrenal cortex and testis as well as diminished conversion of these to 17-ketosteroids by the damaged liver.

Finestone and Shuman (1952) have studied in 10 cases of cirrhosis the response of the adrenal cortex to the pituitary stimulant, epinephrine. These patients showed insufficient response as judged by eosinophil count, 17-ketosteroid excretion and hyaluronidase-fluorescein skin wheal test. However, since epinephrine probably exerts its action *via* the pituitary, these data could indicate either pituitary or adrenal cortical depression. That pituitary depression exists has been suggested by the finding of decreased urinary gonadotrophin excretion in liver disease (Dohan *et al*, 1952).

Relatively little is known of the role of the adrenal cortex in experimental liver disease. Cameron and Karunaratne (1936) have shown that carbon tetrachloride is capable of inducing cirrhosis in albino rats if injected at sufficiently close intervals for some time. Aterman (1954) and Cavallero *et al* (1951) noted a reduction in fibrous tissue content of the livers of rats in carbon-tetrachloride-induced cirrhosis if cortisone was given simultaneously with the cirrhogenic agent. Diengott and Ungar (1954) on the other hand, observed that cortisone therapy may actually aggravate the cirrhosis thus induced, while Aterman and Ahmed (1953) reported considerable deterioration of liver function in such rats. The results of these studies are thus conflicting.

It will be clear, from this brief resume of work done so far on adrenal function in liver disease, that no systematic studies have been carried out. The present study was undertaken (1) to gather evidence of role of adrenal cortex in the different stages of evolution of experimentally induced cirrhosis and, in particular, the effect of exogenous cortisone on the cirrhotic process and (2) to assess the adrenal cortical function in human liver disease, making use of the adrenal function tests.

Methods and Materials

In recent years a number of tests of adrenal cortical function have been developed, based on the numerous haematologic and biochemical changes induced by administration of ACTH or by application of any non-specific stress (cold, histamine etc.). Besides these indirect tests of adrenal function, several techniques for direct measurement of corticoid output in human subjects have also been developed.

Adrenal function tests :

Some of the adrenal function tests carried out in the present study were the following :

(1) *Eosinophil response to ACTH adminition.*

(2) *Urinary uric acid response to ACTH.*

(3) *Fluorescein-hyaluronidase skin-wheal test.*
(4) *Blood cholesterol response to ACTH administration.*
(5) *Urinary corticosteroids.* (i) Phosphomolybdic acid reduction method, (ii) Copper-reduction method and (iii) Formaldehyde liberation methods.

These chemical reactions, are not specific for cortical steroids but are also given by a large number of other organic compounds. This fact is emphasised by the observation (Heard *et al* 1946) that even in the absence of adrenal cortical activity, as in the adrenalectomised dog and in Addison's disease, an appreciable amount of 'chemocorticoids' are measured by these techniques, showing that steroids of non-adrenal origin contribute to the quantities measured.

Reddy *et al* (1952) have more recently developed a rather specific method based on the Porter-Silber reaction for the quantitative determination of butanol-soluble 17,21-dihydroxy-20-ketosteroids in the urine. Since there is evidence that 17-hydroxycorticosterone is the principal hormone secreted by the adrenal cortex (Nelson and Samuels, 1952) this method appears to give a more specific measure of adrenal steroids than the earlier techniques. This technique was therefore adopted in the present study.

(6) *Urinary 17-ketosteroids.*—The technique of Callow *et al* (1938) for urinary 17-ketosteroid estimation was followed in the present study.

(7) *Serum sodium.*—Serum sodium was estimated in the present study by the chemical method of Weinbach (1935).

(8) *Adrenal ascorbic acid depletion test.*—The technique of Roe and Kuether (1943) was adopted in the present study for the ascorbic acid determination of the rat adrenal. Cold, histamine and ACTH were employed as the "stresses" and depletion of ascorbic acid was measured in each case.

There is no satisfactory explanation for the depletion of ascorbic acid which accompanies increased adrenal cortical activity. This vitamin appears to be concerned in some way with the reactions leading to cortical hormone synthesis or their subsequent secretion from the adrenal gland. Lowenstein and Zwemer (1946) have claimed the isolation and characterisation of a water-soluble conjugate of a cortical steroid and ascorbic acid. Vogt (1948), however, could find no consistent difference between the ascorbic acid content of the blood entering and that leaving the adrenal cortex under conditions of increased activity.

LIVER FUNCTION TESTS :

Simultaneously with the performance of the adrenal function tests, the liver damage was assessed in the clinical cases by a battery of liver function tests. The liver function tests carried out in the present study were the following :

(i) *Thymol turbidity and thymol flocculation* (Neefe's modification of Maclagan's techniques). (ii) *Zinc sulphate turbidity* (Kunkel's method). (iii) *Colloidal gold flocculation* (Maclagan's). (iv) *Prothrombin concentration* (Iyenger's modification of Quick's technique). (v) *Total serum proteins and albumin* (King's method). (vi) *Total and direct bilirubin* (Malloy and Evelyn's technique). *Serum cholinesterase* [determined by the technique of Alcade (1950) using a Beckman pH meter].

In the experimental studies, cirrhosis was induced in young albino rats by injecting twice a week each with 0·1 c.c. of carbon tetrachloride per 100 g. of body weight. The onset of cirrhosis and its progression was studied by killing batches of these rats at weekly intervals and the liver sections stained with haematoxylin and eosin, Masson's trichrome stain for connective tissue and the reticulum stain by Gomori's technique. Warren and Wahi (1947) have, however, pointed out the fallibility of the histological technique alone in the study of fibrous tissue content of pathologic livers. In order to determine the slight variations in the fibrosis at each stage the collagen content of the liver was estimated by the technique of Lowry *et al* (1941). The reversibility of the cirrhosis at each stage was studied by setting aside batches of rats which were spared of further injection of carbon tetrachloride and noting the regression of fibrosis, if any, at the end of two and three weeks. In experiments where the effect of cortisone on the cirrhotic process was studied, groups of rats were isolated from the experimental group and injected intramuscularly each with 5 mg. per day of cortisone for 6 days, 10 mg. per day for three days and 5 mg. per day for two days, and compared with the two-weeks follow-up rats as controls. The adrenal function was assessed at each stage by studying the depletability of the adrenal ascorbic acid following the stress of cold, histamine (1 mg.) and ACTH (1 mg.), sudanophilia, and hematoxylin and eosin stain.

In the clinical studies, adrenal cortical function was assessed in cases of portal cirrhosis and infectious hepatitis. The diagnosis was established in each case by clinical history, liver function tests and sometimes by liver biopsy. A battery of adrenal function tests was employed

to test the responsiveness of the adrenal cortex to stimulation by a single intramuscular injection of 25 mg. ACTH as measured after an interval of 4 hours.

Discussion

The data obtained in the experimental studies are represented in Fig. 1. It will be seen that depletability of adrenal ascorbic acid (an index of adrenal cortical function) by the "Stresses" of cold, histamine and ACTH is normal in the reversible stage of carbon-tetra-chloride-induced cirrhosis. However, once the cirrhosis becomes irreversible there is a marked decrease in the depletability of the ascorbic acid. It would appear therefore that the irreversible stage of the cirrhosis is associated with a functionally damaged adrenal cortex while in the reversible stage adrenal function is normal. The damage seems to be both at the pituitary and adrenal cortex levels as both histamine and ACTH elicit diminished depletability of the ascorbic acid in the irreversible stage. The exact mechanism leading to the adrenal damage remains largely unknown. Wahi *et al* (1956a) have discussed the various possible mechanisms which could explain the association of irreversible cirrhosis with depressed adrenal function. According to these authors, the progressive liver damage diminishes the ability of this organ to deal effectively with the increased quantities of adrenal hormones arising as a result of the prevailing stress and these accumulated hormones act back on the pituitary causing secondary pituitary and adrenal cortical depression. Moreover, carbon tetrachloride may be toxic to the pituitary itself. In either case, the resulting decrease in circulating corticoids leads to unabated proliferation of connective tissue elements and in due course the process becomes irreversible. It appears therefore that in carbon tetrachloride-induced-cirrhosis the adrenal cortex gets variously involved and conditions the picture of the liver that emerges at the various stages of the evolution of the cirrhosis.

The results obtained regarding the effect of cortisone on the cirrhotic process indicate that this hormone accelerates the regression of cirrhosis when the process is even otherwise reversible ; but once the cirrhosis becomes irreversible cortisone is ineffective in this respect. According to

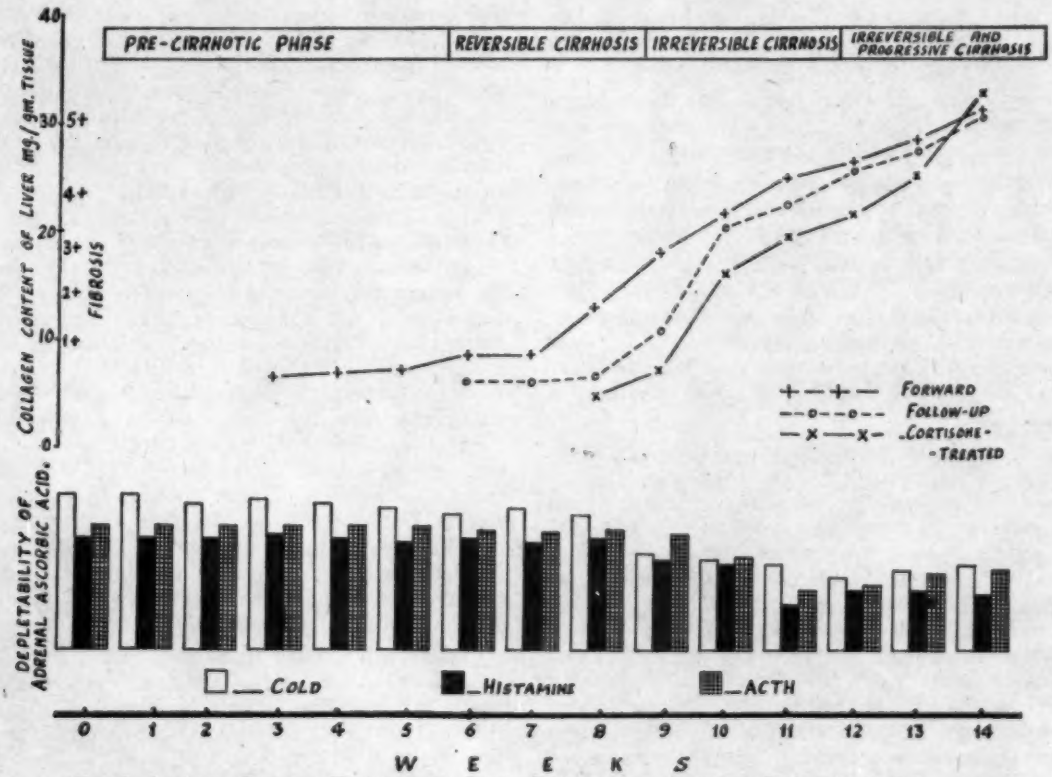

Fig. 1—Adrenal Cortical Function in Carbon-Tetrachloride-Induced Cirrhosis in Rats.

Wahi *et al* (1956 b) cortisone helps to undo only certain early stages in the maturation of collagen, like the change from precollagen to collagen, but once mature collagen is laid down cortisone is ineffective.

In Figs. 2 and 3 are presented the results of adrenal function studies in clinical cases of portal cirrhosis and infectious hepatitis. It is clear from these data that there is insufficient response of the adrenal cortex to ACTH stimulation in several of these cases. In 13 of the 24 cases of portal cirrhosis and 16 of the 32 cases of infectious hepatitis there was less than the normal 50 per cent fall in eosinophil count. Similarly, 14 of the cases of portal cirrhosis and 15 of the cases of infectious hepatitis failed to show a rise of more than 50 per cent in urinary uric acid following ACTH administration. Serum cholesterol response was subnormal in 8 of the 14 cases of cirrhosis studied and 11 of the 17 cases of infectious hepatitis. The response to these tests in each case did not always run parallel though good correlation has been observed between the uric acid and serum cholesterol responses in the cases studied so far. All these tests depend on the metabolic activities of glucocorticoids and therefore constitute a good index of the circulating levels of these hormones. The data obtained in the present study therefore

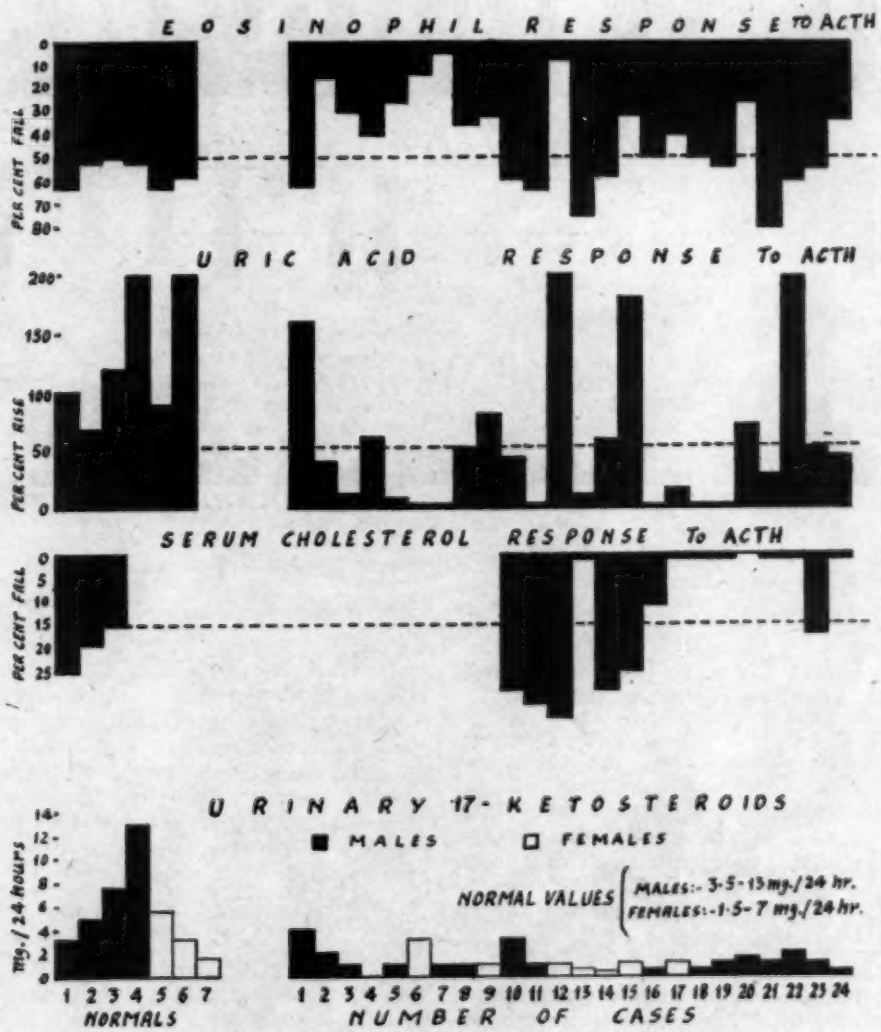

FIG. 2—ADRENAL CORTICAL FUNCTION IN PORTAL CIRRHOSIS.

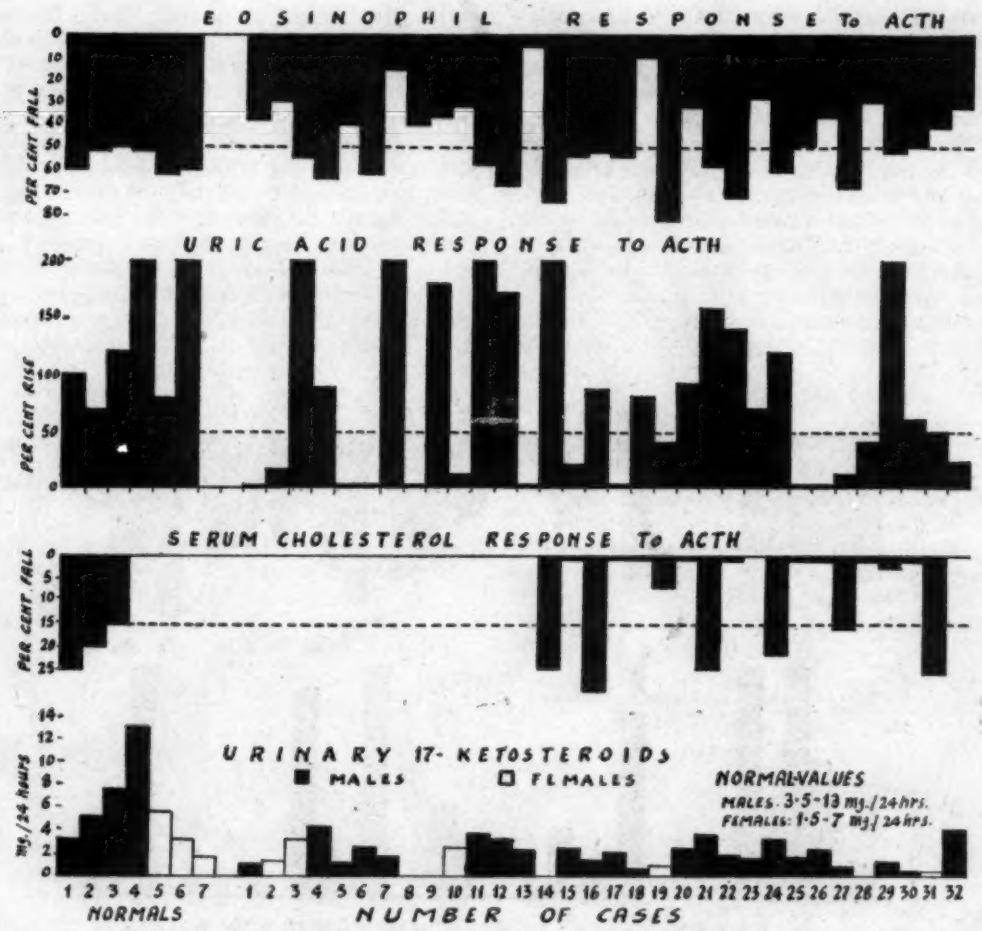

FIG. 3—ADRENAL CORTICAL FUNCTION IN INFECTIOUS HEPATITIS.

is suggestive of decreased adrenal secretion of these hormones. Further work using more adrenal function tests has to be carried out before arriving at definite conclusions in this regard.

Urinary 17-ketosteroids were markedly decreased in 20 of the 23 cases of cirrhosis and 17 of the 29 cases of hepatitis studied. There was no apparent correlation between the urinary excretion of these ketosteroids and the response to the above adrenal function tests. This is to be expected since their formation in the body is affected by other factors such as the presence of malnutrition and liver damage.

The fluorescein-hyaluronidase skin-wheal test did not prove to be a reliable test of adrenal function as it failed to give consistent responses even in normal human controls. Finestone and Shuman (1956) have similarly encountered difficulties in interpreting the results obtained with this test. The levels of urinary 17-hydroxycorticosteroids were also studied in a number of the above cases of portal cirrhosis and infectious hepatitis and the results obtained with this test are also suggestive of the presence of adrenal insufficiency. Serum sodium levels have been studied in a few of these cases and detailed data regarding this will be presented when more cases have been studied.

SUMMARY

The role of the adrenal cortex was studied in experimental and human liver disease. Adrenal cortical function was assessed in the various stages of evolution of carbon tetrachloride-induced

cirrhosis as well as in clinical cases of portal cirrhosis and infectious hepatitis. Evidence has been presented which suggests that there is adrenal deficiency in these disease states. This is a preliminary report and it is proposed to carry out further work before arriving at conclusions regarding the functional status of the adrenal cortex in liver disease.

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TOTAL AND AVAILABLE IRON CONTENT OF SOME FOODSTUFFS OF BIHAR*

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The figures for available iron which are of importance nutritionally than total iron content have been reported by various workers. The amount of total and available iron present in foodstuffs as reported vary to a great extent. This variation is not only in the amount of total and available iron present in the foodstuffs but also in the percentage of available iron in total iron. Ranganathan (1938), Roy *et al* (1939) and singh and Bannerji (1955) have suggested that such lack of similarity was due to local variation in the iron content of foodstuffs presumably due to soil and climatic conditions.

The calculation of iron present in the food consumed by the people of this state has so far been made from the Health Bulletin No. 23 (1951) since no such figures either for total or available iron for food of this state were available, except for the few reported by Mitra (1938). It was therefore decided to investigate this aspect of the problem as also the variations that might be due to soil and climatic conditions. The results are presented in this paper.

* Paper presented before the 41st session of the Indian Science Congress Association, Hyderabad (Dn.) January 1954.

TABLE 1—SHOWING THE TOTAL AND AVAILABLE IRON OF FOODSTUFFS EXPRESSED IN MILLIGRAM PER 100 GRAMMES AND THE PERCENTAGE OF AVAILABLE IRON

Common name	Botanical name	Total iron mg./100 g.	Available iron mg./100 g.	Percentage of available iron in total iron
Bajra or Cambu	*Pennisetum typhoideum*	9·25	2·56	27·7
Bamboo seeds	*Bambusa arundinaeca*	48·63	2·00	4·1
Barley (with husk)	*Hordeum vulgare*	4·43	0·87	19·9
Italian millet (Kowni or Kangni)	*Setaria italica*	5·43	1·65	30·3
Maize, dry	*Zea mays*	7·06	1·87	26·6
Maize, tender	„	4·35	2·00	45·8
Marha (Bhunja China)	*Panicum miliaceum*	2·78	1·25	44·8
Milo, whole	*Andropogen sorghum*	11·04	0·75	6·8
Oatmeal (Jai)	*Avena sativa*	4·12	0·31	7·4
Oats, rolled	„	6·12	2·25	36·7
Panivaragu	*Panicum miliaceum*	7·23	2·50	34·4
Ragi	*Eleusine coracana*	6·62	1·00	15·6
Rice, Brazilian	*Oryza sativa*	6·70	1·75	26·2
Rice, parboiled home-pounded	„	3·55	1·00	28·4
Rice, parboiled milled	„	2·33	0·75	32·2
Rice, raw home-pounded	„	2·15	0·81	37·3
Rice, puffed	„	1·59	0·11	6·9
Sanwa millet	*Panicum crusgallivar frumantaceum*	2·60	1·87	72·1
Semolina (Suji)	*Triticum vulgare*	1·38	0·75	55·6
Varagu (Kodo millet without husk)	*Paspalum scorbiculatum*	1·15	0·12	10·9
Do. (without husk)	„	2·27	0·15	6·6
Wheat flour whole (atta)	*Triticum vulgare*	3·96	1·87	50·8
Wheat flour, refined (maida)	„	1·56	0·93	59·3
Wheat whole	„	6·10	3·00	49·2
PULSES				
Bengal gram (Channa) (with husk)	*Cicer arietinum*	4·85	1·75	35·9
Do. roasted (Bhunja channa)	„	10·27	1·06	10·3
Do. green	„	1·54	0·03	1·8
Black gram (Urd) (with husk)	*Phaseolus mungo*	8·00	1·25	15·6
Field bean, dry (satari), with husk	*Dolichos lablab*	4·69	2·12	45·3
Green gram (mung) (with husk)	*Phaseolus radiatus*	9·68	3·25	33·5
Kabuli channa	*Cicer arietinum*	3·03	2·12	69·7
Khesari dhal (with husk)	*Lathyrus sativus*	4·94	1·00	20·4
Lentil (Masur)	*Lens esculenta*	2·89	2·00	69·2
Pea, dry (Matar)	*Pisum sativus*	5·28	0·75	14·2
Do. green (Chemi)	„	1·14	0·35	31·6
Red gram (Arhar)	*Cajanus indicus*	14·08	1·37	9·8
Horse gram (Kulthi) (with husk)	*Dolichos biflorus*	8·36	0·31	3·7
LEAFY VEGETABLES				
Amaranth (Lal sag)	*Amaranthus blitum*	18·20	0·24	1·3
Bathua sag	*Chenopodium album*	6·58	0·50	7·6
Carrot leaves	*Daucus carota*	9·39	0·19	2·0
Coriander leaves	*Coriandrum sativum*	9·47	0·05	0·5
Drumstick leaves	*Moringa oleifera*	5·06	0·05	1·0
Fenugreek leaves (Methi-ke-sag)	*Trigonella foenum-graecum*	20·00	0·10	0·5
Khesari leaves	*Lathyrus sativus*	4·69	0·19	3·2
Lettuce	*Lactuca sativa*	1·85	0·03	1·6
Mint (Pudina)	*Mentha viridis*	16·36	0·05	0·3

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TABLE 1—*Contd.*

Common name	Botanical name	Total iron mg./100 g.	Available iron mg./100 g.	Percentage of available iron in total iron
Poin-ke-sag	*Bassela rubra*	4·01	0·22	5·6
Onion stalks (Pyaz-ke-sag)	*Allium cepa*	1·00	0·05	5·0
Rape leaves (Sarso sag)	*Brassica napus*	11·88	0·31	2·6
Saru sag (on dry weight basis)	*Bauhinia variegata*	42·50	4·00	9·4
Spinach	*Spinacia oleracea*	3·80	0·22	5·9
Soya sag	*Glycine hispida*	10·00	0·01	1·0
OTHER VEGETABLES				
Amra	*Spondias mangifera*	3·93	3·40	86·6
Beans (Sem)	*Dolichos lablab*	1·45	0·05	3·4
Bitter gourd (Karela) big size	*Momordica charanthia*	2·10	0·20	9·5
Brinjal	*Solanum melogena*	1·56	0·02	1·6
Broad bean (Makhan sem or bar sem)	*Ajnara Scolymus*	1·58	0·15	9·5
Calabash cucumber (Kaddu)	*Lagenaria vulgaris*	0·80	0·36	47·1
Cauliflower	*Brassica oleracea botrytis*	1·39	0·20	14·4
Chatail	*Momordica chochinchinensis*	1·83	0·47	25·8
Jack, tender (Kanch Kathal)	*Artocarpus integrifolia*	0·97	0·10	10·3
Kavai fruit (Kundri)	*Coccinia indica*	1·73	0·65	37·5
Ladies finger (Ramtorai)	*Hibiscus esculentus*	2·43	0·06	2·7
Nellikia (Amla)	*Phyllanthus emblica*	2·25	0·60	26·7
Parwar	*Trichosanthes dioica*	2·02	0·25	12·3
Plantain flower	*Musa paradisiaca*	0·12	0·05	28·8
Plantain stem	,,	0·98	0·03	3·6
Pumpkin (Kohara)	*Cucurbita maxima*	1·05	0·22	21·4
Ram Kela	—	1·18	0·02	2·0
Ridge gourd	*Luffa acutangula*	1·82	0·05	2·7
Snake gourd	*Trichosanthes anguina*	1·07	0·19	17·7
Sting beans (Boro)	*Vigna catjang*	1·31	0·32	24·8
Tomato, ripe	*Lycopersicum esculentum*	1·72	0·50	29·1
Shalgum (turnip)	*Brassica rapa*	0·33	0·15	44·8
Vegetable marrow (Nenua)	*Luffa aegyptica*	0·55	0·38	69·1
ROOTS AND TUBERS				
Beet root	*Beta vulgaris*	1·72	0·30	17·7
Carrot	*Daucus carota*	2·34	0·02	1·1
Colocasia (Arwi)	*Colocasia antiquorum*	2·28	0·35	11·0
Knol-khol (Katkobi)	*Brassica oleracea caulorapa*	0·77	0·03	4·0
Onion, big size	*Allium cepa*	1·04	0·19	18·2
Potato	*Solanum tubersam*	1·57	0·87	55·1
Potato, pahari	,,	2·21	0·95	42·9
Potato, sweet (Misriknnd)	*Ipomoea batatas*	0·71	0·15	20·8
Radish, white (Muli)	*Raphanus sativus*	0·92	0·15	16·3
Root of spinach	*Spinacia oleracea*	9·50	0·35	3·7
Suthni	*Dioscorea fasciculatum*	0·33	0·30	90·9
Yam (Ol)	*Amorphophallus campanulatus*	0·69	0·10	14·4
Yam, wild (Jungli ol), on dry weight basis	,,	39·75	2·50	6·3
NUTS AND SEEDS				
Coconut pulp	*Cocos nucifera*	1·67	0·70	41·9
Groundnut, unroasted	*Arachis hypogea*	0·82	0·10	12·1
Groundnut cake flour, defatted at Patna	,,	5·90	1·68	28·5

TABLE 1—*Contd.*

Common name	Botanical name	Total iron mg./100 g.	Available iron mg./100 g.	Percentage of available iron in total iron
Gingelly seed (Til)	*Sesamum indicum*	8·71	0·12	1·5
Lotus seeds	*Nelumbo nucifera*	2·31	0·40	17·3
Mustard seeds (Rye)	*Brassica juncea*	19·20	2·25	11·7
Linseed seeds (Tisi)	*Linum usitatissium*	2·11	1·85	87·7
Water chestnut (Singhara)	*Trapa bispinosa*	0·82	0·02	3·1
FRUITS				
Cucumber (Khira)	*Cucumis sativus*	1·05	0·11	10·5
Cucumber (Kakri)	"	1·46	0·19	13·1
Falsa	*Grewa asiatica*	2·54	0·25	8·8
Guava, ripe	*Psidium guyava*	1·35	0·10	7·4
Jambu fruit (Jamun)	*Eugenia jambolana*	1·84	0·10	5·4
Kharbuja (Musk melon)	*Cucumis*	0·24	0·17	73·7
Khirni	*Mimusops hexandra*	4·83	0·10	2·2
Lichi	*Nephelium litchi*	0·39	0·10	25·3
Mango, ripe	*Mangifera indica*	0·54	0·10	18·7
Mango, green	"	3·05	0·52	17·2
Palmyra fruit, tender (Tar ko koa) ...	*Borassus flabellifera*	0·25	0·06	24·0
Papaya, ripe	*Carica papaya*	0·51	0·03	6·3
Papaya, green	"	0·66	0·22	34·1
Plantain, ripe	*Musa paradisiace*	1·39	0·13	9·7
Plantain, green	"	0·62	0·35	56·5
Zizyphus	*Zizyphus jujuba*	0·63	0·04	6·3
CONDIMENTS				
Chillies, green	*Capsicum annuum*	1·44	0·29	19·9
Chillies, dry	"	2·46	0·40	16·3
Cloves, dry (Laung)	*Eugenia caryophyllata*	5·38	0·50	9·3
Coriander (Dhania)	*Coriandrum sativum*	17·23	0·50	2·9
Cumin (Zira)	*Cuminum cyminum*	23·84	1·87	7·9
Garlic, dry	*Allium sativum*	1·47	0·42	28·6
Ginger	*Zingeber officinale*	3·96	0·57	14·2
Omum (Ajwan)	*Carum copticum*	15·45	10·00	64·9
Tamarind, green	*Tamarindus indicus*	1·37	1·02	74·9
MISCELLANEOUS				
Arrowroot	*Maranta arundinacea*	1·26	0·50	39·7
Barley powder (Patients food)	*Hordeum vulgare*	0·98	0·50	51·2
Boont satto (roasted and powdered Bengal Gram)	*Cicer arietinum*	7·23	0·94	12·9
Jao sattoo (roasted and powdered Barley)	*Hordeum vulgare*	11·88	2·75	23·2
Poppy seeds	... ...	8·41	1·75	20·8
Pan (betel leaves)	*Piper betle*	5·43	0·06	1·1
Sago	*Metroxylon sago*	1·11	0·45	43·9

Experimental Technique

The modified chemical technique of Shackleton and McCance (1936) was utilised here for the estimation of available iron, while total iron was estimated by ferrithiocynate-amyl alchohol method of Ranganathan (1938).

The validity of the figures obtained in each estimation was checked by simultaneously working out recovery values as well. In every case it was between ± 6 per cent.

One sample of each variety of raw foodstuff of local strain was thoroughly cleaned of all extraneous matters and iron estimated.

Results

A total of 128 samples (cereals 24, pulses 13, leafy vegetables 15, other vegetables 23, roots and tubers 13, nuts and seeds 8, fruits 16, condiments 9, and miscellaneous 7), generally consumed by a large section of the population of Bihar, was analysed. The results, the averages of 3 analyses in each case, are given in Table 1.

A comparative study of the present figures with those of others apparently indicates wide variations and similar is the condition with the figures reported in Health Bulletin No. 23 (*loc. cit.*).

Statistical analysis of the figures of only 75 such samples which were common to other authors shows no significant difference in either total or available iron content of foods except with the figures of Ranganathan (*loc. cit.*) for leafy vegetables only but little significance could be attached to the above conclusion since the number of samples common in each group was very few in almost all the cases.

Soils from various parts of the state was collected and iron estimated by the method suggested by the Association of Official Agricultural Chemists (1947). The figures are given in Table 2.

Table 2—Showing Iron Content of Soil in gramme/100g. (Average of Two Values are Given)

Name of District	*Iron content*
Patna	2·53
Shahabad	3·23
Purnea	2·99
Champaran	2·13
Jamshedpur	1·32
Palamu	5·24

Conclusion

A study of Table 1 would show that there is wide variation in the available iron present in the various foodstuffs of this state and also in the percentage of available iron in total iron ; and that no group of foodstuffs show a consistently higher figure than any other group. Whole wheat flour, refined wheat flour, semolina, sanwa among cereals, linseed (*Linum usitatissium*) among nuts and seeds, musk melon (kharbuja) and green plantain among fruits, omum and green tamarind among condiments and barley powder in the miscellaneous group are the only items which have available iron content above 50 per cent. Lentil and kabuli channa are the only pulses which are rich sources having values of 69·2 and 67·7 per cent respectively. All leafy vegetables have a value below 10·0 per cent. Amra, a small berry, very sour in taste used for culinary purpose and vegetable marrow (*Luffa aegyptica*) contain 86·6 and 69·1 per cent respectively. Suthni (*Dioscorea fasiculata*) has the highest percentage of available iron (90·0) as compared to any other food item in this table.

Beeson (1946) has observed that iron compounds added to the soil have had little effect in increasing the iron contents of the plants. Furthermore the mineral content of the plants is also affected by climate, degree of light, season during which they are grown, and genetic variables. Manuring with artificial manures is another factor of considerable importance. Properly designed experiments are essential to assess the effect of these variables. The iron content of the soils of this state did differ to some extent, yet the apparent difference between the values of both the iron content of the present and other authors (including Health Bulletin No. 23) did not stand the test of significance except in one only. This indicates that the soil iron nor the other variables have any affect so far as the iron content of the plant is concerned, but this cannot be stated with complete confidence as the figures for comparison were small. This present investigation does not corroborate the views of Ranganathan (*loc. cit.*), Roy *et al* (*loc. cit.*) and Singh *et al* (*loc. cit.*) so far as the effect of soil iron on plant iron is concerned.

In view of what has been stated earlier and as long as a well designed experiment is not performed to elucidate these points quite definitely, it would perhaps be more feasible to use the figures of this paper for the calculation of iron present in the foodstuffs consumed by the people of this state.

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A STATISTICAL STUDY OF CARDIAC LESIONS

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A study of 1250 cases admitted in K. G. Medical College Hospital during the period 1953 to 1955 was undertaken. A record of the incidence of various cardiac lesions is reported (Table 1).

Total percentage incidence of congenital heart lesion was 2·24 in the series studied while an incidence of 1 to 2 per cent of all heart diseases has been reported to be of congenital origin.

For exact diagnosis all cases were subjected to fluoroscopic, E. C. G., and teleradiographic studies. Venous pressure, circulation time, vital capacity and ophthalmoscopic appearance were determined in every case.

Details of acquired heart diseases are shown in Table 2.

Tricuspid valvular lesion was present in 8 cases of which it was the only lesion in 3 cases, while in the rest it was associated with other valvular lesions. All were rheumatic in origin.

Miscellaneous—There were two cases of rheumatoid arthritis associated with clinical rheumatic heart lesion.

Severe anaemia was associated with marked congestive heart failure in 4 cases.

Paroxysmal tachycardia developed in 5 cases of which three were associated with rheumatic heart lesion.

There were 4 cases of enlarged heart of unknown aetiology in young persons. No evidence of any known cause was found.

TABLE 1—SHOWING THE TYPES OF CARDIAC LESION AND THE NUMBER OF CASES IN EACH CATEGORY

Disease	No. of cases	Percentage
1. Congenital	28	2·24
Rogers syndrome ... 5 cases		
Fallot's tetralogy ... 5 ,,		
Patent interauricular septum ... 5 ,,		
Lutembacher's syndrome ... 3 ,,		
Pulmonary stenosis 3 ,,		
Patent ductus arterious ... 3 ,,		
Aortic stenosis ... 1 case		
Undiagnosed ... 3 cases		
2. Inflammatory (endocardial) ...	430	34·40
3. Cor pulmonale	247	19·76
4. Hypertension	144	11·52
5. Coronary thrombosis ...	125	10·00
6. Cardiac neurosis	115	9·20
7. Myocardial degeneration ...	74	5·92
8. Pericardial effusion ...	32	2·56
9. Angina pectoris	30	2·40
10. Miscellaneous (unclassified) ...	15	1·2
11. Aneurysm	10	0·8
	1250	100

This analysis about sex incidence should be interpreted with due regard to the number of beds available on the medical side of K. G. Medical College, viz., male patients—96 beds, female patients—56 beds.

Although admission officers made it a point to admit all such cases as are included in this study from among the patients who visited the medical out-patients department.

Investigations like circulation time, venous pressure, screening, teleradiogram and vital capacity were made in the majority of cases.

Vital capacity was of the greatest value in assessing the severity and progress of congestive failure.

Clinical and laboratory evidences of congestive heart failure do not run parallel, either of them may appear well in advance of the other.

COMMENTS

Age—All cases of subacute bacterial endocarditis occurred in the age group below 22 years.

Sex—All cases but one of aortic regurgitation occurred in the males. Commonest lesion in the female was mitral stenosis.

History of pain in joints—It was more common in the more severe form of the disease. Highest percentage of positive history was present in mitral stenosis and regurgitation.

TABLE 2—SHOWING DETAILS OF ACQUIRED CARDIAC LESIONS

Disease	Total No. of cases	F	%	Rheumatic history		Syphilitic		Others		Hemiplegia	Congestive failure		Death		Age		E.C.G.	Remarks
				No.	%	No.	%	No.	%		No.	%	No.	%	Max.	Min.		
Mitral stenosis ...	52	29	55·7	19	38·5	—	—	—	—	5	27	51·9	6	11·7	—	—	Auricular hypertrophy (40%)	Chorea (1 case)
Mitral stenosis and regurgitation ...	168	93	55·3	65	38·7	—	—	—	—	3	140	83·3	24	14·2	53	3	R.A.D.	—
Mitral regurgitation ...	33	14	42·4	11	33·3	—	—	—	—	1	27	81·8	2	6	—	—	R.A.D. (50%)	—
Aortic regurgitation ...	32	1	3·1	4	12·5	19	59·3	7	21·8	1	18	56·2	1	3·1	—	—	L.A.D. (75%)	—
Mitral stenosis, regurgitation & aortic stenosis	30	8	26·6	11	36·6	—	—	—	—	2	14	46·6	6	20	—	—	—	—
Auricular fibrillation (a) Rheumatic ...	55	26	47·2	27	49	—	—	—	—	3	40	72·7	7	12	62	20	—	—
(b) Degenerative ...	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(c) Coronary thrombosis ...	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(d) Severe anaemia ...	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(e) Post blood transfusion ...	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
(f) Thyrotoxicosis ...	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rheumatic carditis ...	33	11	33·3	—	—	—	—	—	—	—	14	42·4	2	6	—	—	L.V. strain	14 cases had similar attacks before.
Subacute bacterial endocarditis ...	19	3	15·7	15	79	—	—	—	—	4	14	73·7	9	47·3	—	—	Normal in 3	All cases had clubbing. R.B.C. in urine—17 cases. Cerebral vascular accidents—4.

Acute rheumatic fever—Fair number of patients were admitted with acute rheumatic fever.

Mortality—Highest mortality was present in subacute bacterial endocarditis inspite of the use of antibiotics.

Congestive heart failure was present in the highest percentage in mitral stenosis and regurgitation, a close second was subacute bacterial endocarditis.

The younger the patients seeking medical attention, the worse the prognosis. Patients who gave history of rheumatic infection had a more severe course, and the mortality was higher. This does not evidently apply to those in whom cardiac lesion is detected in the routine check up.

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FUNGISTATIC ACTIVITY OF AROMATIC DIAMIDINES

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Earlier *in vitro* study of antifungal activity of the aromatic diamidines, stilbamidine isethionate and pentamidine isethionate conducted during the later part of the year 1954 and the beginning of 1955 yielded so encouraging results (Andleigh) that it was considered desirable to study the effect of other aromatic diamidines on the same five cultures of *Madurella mycetomi*, isolated from local cases of maduromycosis of the black granule type. The diamidines tested in the present series were:

1. Stilbamidine isethionate.
2. Pentamidine isethionate.
3. Hydroxystilbamidine isethionate.
4. 4:4′-Diamidinodiphenylamine dihydrochloride (M. & B. 938).

Stilbamidine and pentamidine were again included in the present investigation because of the following reasons:

1. For the sake of comparison with the other diamidines.

2. Because the concentrations of the chemicals under test employed in the present investigations were different from those that were employed in the earlier investigations (Andleigh).

MATERIAL AND METHOD

Antifungal activity was measured by the 'serial dilutions in liquid medium' method similar to that described by Bocobo *et al* (1953). Brain-heart infusion liquid medium with 20 units of penicillin and 40 units of streptomycin was used for the growth of organisms isolated from cases of maduromycosis. The culture isolated from such cases were all of *Madurella mycetomi*. Five of these cultures were tested for their sensitivity against all the four diamidines and the test was subsequently repeated several times for each culture.

Brain-heart infusions liquid medium was prepared as follows:

37 g. Difco's dehydrated brain-heart infusion powder were added to 1000 ml. of distilled water in a large two litre flask. The whole thing was dissolved in the autoclave in steam and when dissolved it was sterilised at 15 lb. pressure for 20 minutes. After the media had cooled to 35°C. 20 units of penicillin and 40 units of streptomycin per ml. of the medium were added. To this pentamidine, stilbamidine, hydroxystilbamidine and M. & B. 938 were added directly setting up serial dilutions of the compounds in concentrations of 0·2 mg., 0·1 mg., 0·05 mg., and 0·01 mg. per ml. of the medium. No solvent to dissolve the chemicals was needed because the chemicals were soluble directly in the medium and while the other three made a perfectly clear and transparent medium, the medium containing stilbamidine was slightly opalescent.

Growth was observed at 37°C. and the end point was determined at the lowest concentration of the compound where complete inhibition of the growth occurred.

The results of the experiments are shown in Table 1. It will be seen from a study of the table that both 4:4′-diamidinodiphenylamine dihydrochloride and hydroxystilbamidine isethionate are effective fungicidal agents against *Madurella mycetomi* and that while hydroxystilbamidine isethionate is superior to pentamidine

TABLE I—SHOWING THE TYPE AND CONCENTRATION OF CHEMICALS USED FOR FUNGISTATIC EFFECT

Chemicals tested	Concentration used			
	0·01 mg. per ml.	0·05 mg. per ml.	0·1 mg. per ml.	0·2 mg. per ml.
CULTURE NO. 1				
Stilbamidine ...	+	+	+	±
Pentamidine ...	+	+	−	−
Hydroxystilbamidine ...	+	±	−	−
4 :4′-Diamidinodiphenyl-amine dihydrochloride	+	−	−	−
CULTURE NO. 2				
Stilbamidine ...	+	+	+	±
Pentamidine ...	+	±	−	−
Hydroxystilbamidine ...	+	±	−	−
4 :4′-Diamidinodiphenyl-amine dihydrochloride	+	−	−	−
CULTURE NO. 3				
Stilbamidine ...	+	+	+	±
Pentamidine ...	+	+	−	−
Hydroxystilbamidine ...	+	−	−	−
4 :4′-Diamidinodiphenyl-amine dihydrochloride	+	−	−	−
CULTURE NO. 4				
Stilbamidine ...	+	+	+	+
Pentamidine ...	+	+	−	−
Hydroxystilbamidine ...	+	−	±	−
4 :4′-Diamidinodiphenyl-amine dihydrochloride	+	−	−	−
CULTURE NO. 5				
Stilbamidine ...	+	+	+	+
Pentamidine ...	+	+	−	−
Hydroxystilbamidine ...	+	−	−	−
4 :4′-Diamidinodiphenyl-amine dihydrochloride	+	−	−	−

isethionate, 4 :4′-diamidinodiphenylamine dihydrochloride is superior to both pentamidine and hydroxystilbamidine.

In the case of 4 :4′-diamidinodiphenylamine dihydrochloride no growth appeared in the concentration of 0·05 mg. per ml. of the medium with any cultures, tested in the case of hydroxystilbamidine some growth appeared in a concentration of 0·05 mg. per millilitre of the medium. With pentamidine, of course, the growth appeared in all the concentrations below 0·1 mg. per ml. of the medium.

We have thus very effective fungistatic agents in the form of hydroxystilbamidine isethionate and 4 :4′-diamidinodiphenylamine dihydrochloride as judged by the *in vitro* tests.

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PRACTITIONERS' SERIES

BIRTH CONTROL METHODS

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The teaching of birth control is essential because patients are referred to birth control clinics by the family doctor.

Some doctors refer the patients to the clinic informing them that the clinic is doing a specialised work in this field and will give some injections or oral tablets which will prevent conception for a few years. Some patients come to the clinic bringing with them a diaphragm and jelly, which has been chosen by their doctor just by looking at them. The patient is unaware as to what size to buy and how to insert and use the diaphragm.

The first important step in introducing the patient to family planning is to prepare her and her husband in such a way that they will be able to accept the method or the methods, they are going to use. The aim of family planning is to help the woman to properly space her pregnancies so that she can recoup her health and take proper care of the child after each delivery. How many children a couple should have, must be decided by them. We are not the judges to determine this for other people.

I would like to outline all the methods of birth control that are available and our experience on the effectiveness of individual methods.

There are two types of methods:

A. Those which do not require any medical aid. The patients read the instructions and follow the method.

B. Those which require medical aid.

Methods Not Requiring Medical Aid

Abstinence—This is the only method which is absolutely sure to succeed, but it is not practicable. In Bombay this method is quite commonly practised among the industrial workers. The wife might remain at her native place for a year or so after delivery or she might be sent away at any time for 2-3 years just to prevent a pregnancy.

In some couples in whom other methods have failed, resort to abstinence is the only method known to them to prevent further undesirable pregnancy.

One of the most frequent complaints against this method from the people who have tried to practise it, is the tension and irritability of both the partners which makes living together almost unbearable.

Coitus interruptus (commonly known as withdrawal method)—This is the method apparently widely used. Out of our 1040 cases surveyed, 317 reported that they used some sort of contraceptive before they sought medical advice. Fifty (15·8 per cent) practised coitus interruptus at one time or the other with the intention of preventing pregnancy.

The method is simple and does not need special appliances. The disadvantages of this method have to be considered. People adopting it had a large number of failures. Out of 50 cases, 67 per cent met with failures. The failures are probably due to uncertainty of control over the emission and the fact that pre-ejaculatory secretion might contain spermatozoa which escape before the actual ejaculation.

This method brings a great deal of anxiety to the woman who often is unable to relax during intercourse because she fears that her husband might not withdraw in time. One of the common reasons for the women to dislike this method, is that they believe that they are being deprived of the beneficial effects of the semen.

Lactation—There is a common belief that lactation prevents conception. The exact time, when ovulation starts again, after the birth of a child in a lactating woman is not known. It is true that for some time after delivery, some women, but not all, are sterile for several months. However, that ovulation can and does occur during lactation, is now well established. Lactation in itself, therefore, has no role in contraception.

Condom—A condom is used by the husband and he must realise his responsibility. It is put on just before the intercourse and the vagina may be lubricated with contraceptive jelly for two reasons: (i) Safety of the method and (ii) to reduce the dryness and friction and thus prevent the tearing of the condom. During withdrawal, the upper end of the condom should be held to prevent spilling of semen or slipping down of the sheath in the vagina.

The advantages of a condom are that it is easily available and quite simple to use. The disadvantage is that the condom might tear or it might slip thus spilling its contents. Some men dislike it because it impairs their feeling and a few women reject it for the same reason.

In our series, 138 reported the use of the condom out of 317 and 120 pregnancies resulted. In other countries use of the condom has been reported as a very satisfactory and safe means of birth control.

Methods Requiring Medical Aid

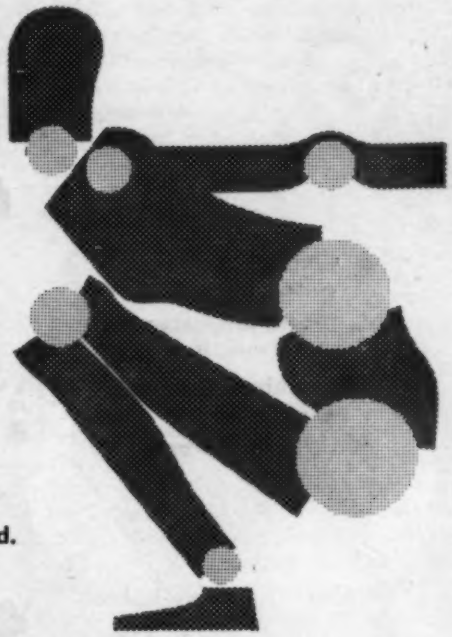
Rhythm method—This method, though it needs no appliances, should be used only under the close supervision of a doctor or a trained person. It is based on the concept that ovulation takes place only once a month, and that pregnancy can occur only at this time during the cycle. It is therefore presumed that if intercourse is avoided during these days, when a live egg is available, pregnancy will be prevented.

In order to use this method effectively, it is necessary that we understand the menstrual cycle and its variations for the particular woman going to use this method. It is therefore necessary to ask the woman to keep an accurate menstrual calender for at least one year. From this calender we will learn the natural fluctuations of her menstrual cycle. As ovulation presumably occurs 14 days before the onset of the next period, we can calculate the probable days on which she might become pregnant. Find out her shortest and longest cycle, subtract 14 days from both these figures which gives the earliest and the latest time of her ovulation, add 2 days at each side and that is the period of abstinence commonly known as an "unsafe period".

Any doctor who advises this method should be prepared to remain in touch with that patient once a month and each time calculate her safe

Irgapyrin

fulfils the wish of the rheumatic patient: it gives him back ease of movement



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period. We must look after the patient each month and only in this way should this method be applied with any hope of success. This is how it is handled at Margaret Sanger Clinic in New York.

The rhythm method was taught and used at Ramnagaram under the sponsorship of W.H.O. and Government of India. Out of 1,088 couples interviewed, 811 (75 per cent) wanted to learn a birth control method. Out of these 102 couples were taught the rhythm method and 82 of these actually followed the method. When interviewed some months later, only 41 regularly followed or practised it.

Foam tablet—If put in contact with moisture it produces a foam which spreads. The tablet also contains some spermicidal chemicals. The patient is instructed to dip a tablet in water just before inserting it deeply into the vagina. The foam that forms, distributes the spermicidal ingredients of the tablet over the cervix and the vagina. The tablet requires a certain amount of moisture to get dissolved and if the vagina is very dry it remains undissolved and the method may fail.

The advantage of this method is that it is extremely simple to use and cheap. The disadvantages are, that a certain number of women will be found who have very little vaginal secretion and thus very little foam will form. In such cases, the chances of cervix not being covered with a chemical are rather great. Another difficulty with a foam tablet is that it causes burning sensation in a certain number of women and men. As there are several foam tablets available, one will have to keep changing until one finds a tablet suitable for both the partners.

Another difficulty with a foam tablet is that its packing must prevent any moisture from coming in contact with a tablet before its use, which is difficult in some parts of the country.

Jelly alone—There are certain spermicidal jellies which can be used alone. The jelly is provided with an applicator. A measured quantity of jelly is emptied in the vagina by inserting the applicator into the vagina as deep as possible. We must find out the exact position of the cervix and ask the patient to guide the applicator in that direction. Because sometimes in badly retroverted cases the cervix is just against the anterior vaginal wall and if not specially instructed, the jelly is deposited into the posterior fornix. The jelly too is simple to use but sometimes the patient complains of excessive vaginal discharge which is due to jelly and we must inform the patient about it when we instruct, and the applicator must be cleaned every time it is used.

One of the most reliable methods, which is commonly advised at our clinic and all over the world is the double method, i.e., a combination of a mechanical and chemical barrier (a diaphragm and a spermicidal jelly).

Diaphragm—It consists of a rubber dome with a compressible rim of coil or watch spring. The sizes vary from 55 to 100 mm. The size commonly used at our clinic is 75 to 85 mm.

Dumas—Rubber or plastic dome without rim remains in the vault of the vagina by suction. Sizes are small, medium and large.

Cervical caps—A rubber or plastic cap like a top hat in shape fits over the cervix only. These are available in different sizes.

Usually at our clinic, the husband establishes contact with us. We discuss with him all available methods, their advantages and disadvantages. So when the husband returns home, he explains to his wife, most of what we had said and when he brings her a few days later, she is usually well prepared to accept the method of choice.

Diaphragm and jelly—Before we fit a patient with a diaphragm a detailed obstetrical and gynaecological history is taken. Instructions are then given to the patient about the method. The diaphragm can be put into the vagina at any time before intercourse. We ask the patients to keep the appliances always at such a place, from where they can easily take it without disturbing anybody. And they are strictly advised to take their appliances with them wherever they go with their husbands, even if the trip lasts just a few days.

The diaphragm is inserted after putting about 2″ of jelly on either side of the dome. The patient is instructed to squat and insert the diaphragm by pushing its rim together and guiding it into the vagina pushing it towards the floor.

After placing the diaphragm the patient is to check up whether the cervix is covered or not. The anterior rim of the diaphragm is pushed well behind the pubic bone. The diaphragm is left in place for at least eight hours after the intercourse. No harm is done if it is left over more than eight hours. After removal it must be washed thoroughly with cold water and any ordinary soap, dried, dusted with frech chalk and put into its box. Coal tar soap, oil and grease diminish the life of the rubber.

Once a month the diaphragm must be tested for any small hole by gently stretching the rubber and holding it against the light. The length of the vagina is measured in order to choose the right size of the diaphragm. This is done by measuring the distance between the posterior

fornix and the os pubis. This distance is equal to the diameter of the diaphragm to be chosen. The anterior rim of the diaphragm is usually held in place by the tone of the anterior vaginal wall. If the tone is poor, it does not hold the anterior rim. If such a patient is given an ordinary diaphragm it might slip down while walking around. Such patients should be fitted with a dumas or a cervical cap.

Dumas holds on to the anterior vaginal wall due to suction. If it is too small there is a space between the rim and the vault of the vagina. If too big it occupies too much space in the vagina. The correct sized cervical cap will cling to the cervix. At the clinic, before any bi-manual examination is done, a cervical smear is taken for the Indian Cancer Research Institute for the diagnosis of early carcinoma of the cervix. Women who have an erosion should be fitted first and their erosion treated later. But with severe vaginitis, the vaginitis should be treated first.

Women who come at any time during their menstrual cycle with the history of intercourse, should be fitted but if the intercourse is round about the fertile days, she should be told that she might be already pregnant and should not blame the method if she does not get her menses.

I would mention a few methods for the sake of completeness. We are not using them for reasons noted against each.

Rag and oil method—A very simple method consisting of a pad made out of a piece of cloth 4" × 4" folded. A string is put at one end to pull it out. It is dipped in sweet or coconut oil and inserted into the vagina against the cervix. The pad works as a mechanical barrier and the oil not as a chemical barrier but by preventing the movement of the sperms due to its density. With too much oil on the pad the patient may complain of messiness but with too little oil the method fails.

Grafenberg's ring can be made of silver, gold, aluminium or other metals. It is inserted into the uterine cavity, and once inserted the patient may have normal coitus without any other preparation. The disadvantages are constant irritation of the endometrium causing chronic endometritis leading to menorrhagia. The patient should be x-rayed every six months to find out its condition and position. It might break and get embedded into the uterine wall.

Cervical stem pessary—It works on the same principles as Grafenberg's ring. But due to the opening in the stem which fits into the cervix, the cervical canal remains always open, which might carry the infection easily into the uterine cavity.

SPECIAL ARTICLE

LABORATORY TESTS OF COMMERCIAL CONTRACEPTIVE FOAM TABLETS

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Tablets which will produce a foam of carbon dioxide when moistened have been recommended for protection from pregnancy. These tablets are to be placed in the vagina before intercourse. When they come into contact with vaginal moisture or semen they produce carbon dioxide. The evolution of gas causes fermentation of the surface layers of the tablet and speedy solution. The contraceptive action of the dissolved constituents is presumably increased by the stirring action of the gas, which tends to distribute the spermicide ingredients throughout the contiguous semen.

Clinical tests have shown that a reasonable degree of protection from pregnancy has resulted from the use of such tablets. In three groups rates of about 70 per 100 couples per year have been reduced to 6 (Nasu *et al*, 1954), 15 (Aida and Kabuchi, 1954) and 9 (Gamble, 1955). Clinical comparisons of the effectiveness of various contraceptive procedures are difficult and time-consuming. Because couples differ greatly in the intensity of desire for protection, there will be variations in the number of omissions, some of which will result in pregnancy. Groups of equal performance in carrying out of the prescription are almost impossible to discover. For this reason, a search has been made for laboratory tests on which an estimate of relative clinical effectiveness may be based.

The problem has been approached by Baker *et al* (1937) through a test of the power of contraceptive tablets to immobilize sperms. After a tablet has disintegrated in warm physiological saline, a portion of the filtrate was mixed with an equal amount of semen and the times required for cessation of motion was observed. While the power to immobilize sperms is important for contraceptive effectiveness, the dilution and filtration of Baker's test are not present under clinical conditions, and the foaming process is not reproduced.

In the hope of finding other characteristics of foam tablets which indicate differences in presumed clinical effectiveness, a study was undertaken of a number of qualities of 14 brands of

contraceptive foam tablets secured in 1955. The results are given below.

The Size and Weight of the Tablet

The average weight of a tablet of each brand tested is given in Table 1. It varied from 0·54 to 1·25 g., with a median value of 0·96 g. The median diameter and thickness were 1·4 and 0·45 cm. The surface areas varied from 3·8 to 5·9 sq. cm. with a median of 4·7 sq. cm. The hole through the centre of a particular make of tablets, designed to accommodate a plastic rod for use in insertion, provides an area which adds to the external surface and increases as solution progresses.

The Quantity of Carbon Dioxide

To determine the amount of carbon dioxide evolved, a tablet was placed in a closed test tube 22 mm. inside diameter, and a measured amount of water was added. The excursion of a mercury manometer connected to the tube was recorded on a kymograph. To keep the pressure changes in a convenient range, a flask was connected to the test tube to provide a closed chamber having a total volume of approximately 400 c.c. To prevent fluctuations in temperature, the test tube and flask were immersed in a water bath at room temperature which was on the average 25°C.

The amount of water used was 2·5 c.c., an amount chosen because it is approximately equal to an ejaculate. For economy of time the pressure was measured at the end of 150 minutes. While further gas may be evolved after two and a half hours, it would have little effect on clinical performance.

For each brand the quantity of carbon dioxide (reduced to standard conditions of 0° and 760 mm. Hg.) was measured two or more times and the average is given in Table 1. The quantities of carbon dioxide thus found among the 14 brands range from 22 c.c. to 116 c.c., with a median value of 56 c.c.

To provide a closer approach to clinical conditions, semen was added to other tablets of each brand. The average weight of 124 ejaculations collected in glass was found to be 3·03 grams with a standard deviation for the group of 0·17 grams. Under clinical conditions some of the semen usually flows out of the vagina, and only a portion of that which remains may reach the tablet. Therefore a smaller amount, 1·3 c.c. of semen, was chosen for the test. This has the advantage that in most cases it permits two determinations from a single ejaculation.

Table 1—Showing the Evolution of Carbon Dioxide by Contraceptive Foam Tablets when Moistened

Brand No.	Weight (gram)	CO_2 in c.c. evolved in 150 minutes when wet with		Time in minutes required to produce 10 c.c. of CO_2 when wet with	
		1·3 c.c. semen	2·5 c.c. water	1·3 c.c. semen	1·3 c.c. water
1A V (foil)	0·8	84	84	5	0·2
1B V (bottle)	0·8	50	84	19	1·3
2. F ...	1·2	88	92	7	0·4
3. Pl ...	1·0	33	36	9	0·6
4. D ...	1·0	75	107	10	0·7
5. Sp ...	1·2	74	116	11	0·2
6. C ...	0·9	37	33	13	0·2
7. R ...	0·9	48	49	13	0·4
8. G ...	1·2	35	30	15	0·3
9. Pr ...	1·0	76	92	16	0·2
10. By ...	1·2	54	92	16	0·3
11. Bi ...	0·8	39	56	21	0·5
12. M ...	1·1	31	32	27	0·6
13. Sa ...	0·5	22	22	34	3·6
14. A ...	0·8	16	22	66	13·3

The semen was placed in the bottom of the test tube and after connecting the manometer the tablet was dropped into the semen from a shelf on the side of the tube.

The quantities of carbon dioxide evolved by each brand of tablets in 150 minutes with 1·3 c.c. of semen are given in Table 1. Each value represents the average of two determinations with semen from different donors. The amounts varied from 16 c.c. to 88 c.c. with a median value of 48 c.c.

The Rate of Evolution of Carbon Dioxide

Since it is believed that sperms may reach the cervical mucus rapidly, a contraceptive foam tablet is probably more effective if it rapidly initiates the process of solution and stirring, which will lead to immobilization. It was found that the rate of production of gas, upon which this process depends, was larger when larger amounts of water were added. It, therefore, seemed desirable to make tests of the rate of evolution of gas with a quantity of fluid approximating that encountered by a tablet under clinical conditions.

The gas-producing reaction of a foam tablet depends in part on the vaginal fluid. Medical literature describes this as variable in amount, but there is no agreement as to its quantity. To secure an estimate of the average amount of

vaginal fluid, the assistance of gynaecologists at the Free Hospital for Women, Brookline, Mass., the Vincent Memorial Hospital, Boston, Mass., and the Margaret Sanger Research Bureau, New York, was enlisted. The entire accessible vaginal wall was wiped with a cotton swab and its increase in weight determined. While this procedure can not collect all of the vaginal fluid, it gives a reasonable approximation to the total quantity.* For 79 such observations, each of a different patient, the average collection of vaginal fluid was 0·67 grams, with a standard deviation of the group of 0·04. The observations were insufficient in number to show whether the quantity varies at different times of the menstrual cycle.

Under the usual clinical procedure the tablet is exposed to only a small portion of the vaginal wall, so that chemical action of the entire 0·67 grams is not to be expected. Perhaps 0·1 c.c. approximates the quantity of fluid to which the tablet is exposed before intercourse, though this may be somewhat increased by the osmotic effect of the saturated solution which forms at the tablet's surface. When tablets were moistened in the test tube described with 0·1 c.c. of water, evolution of gas was slow, requiring about an hour for half of the total production. This indicates that vaginal fluid is not sufficient to induce marked gas production or to form a voluminous solution which might immobilize the sperms.

It would appear, therefore, that semen is the chief fluid causing the reaction in contraceptive foam tablets. To measure the rapidity of the semen-induced reaction, the times required for the production of 10 and 20 c.c. of gas were determined. These were measured from the kymograph curves of the tests of total carbon dioxide production previously described. The tests were made at room temperature which was on the average 25°C. While the production of gas at the higher temperature of the vagina would be more rapid, it is probable that the ranking of the brands would be unchanged. Though 10 and 20 c.c. are only a part of the potential of a tablet they are large when compared with the vaginal cavity which overflows with the average ejaculation of 3 c.c.

The median times of the 15 varieties tested, were 15 and 29 minutes for the production of 10 and of 20 c.c. of gas with 1·3 c.c. of semen. When the same quantity of water was used carbon dioxide was produced more rapidly and the median times were reduced to 0·4 and 1·9 minutes. Increasing amounts of water gave more rapid evolution. The median times for 10 c.c. of carbon dioxide were 12, 2, 0·4, and 0·3 minutes, with 0·1, 0·25, 1·3 and 2·5 c.c. of water. For 20 c.c. the corresponding values were 89, 14, 1·9, and 0·9 minutes.

The order in which the various brands are arranged by the times in which they produce 10 c.c. of gas with 1·3 c.c. of semen is very nearly the same as that based on the times for 20 c.c. in the same experiments, the correlation co-efficient being 0·98. When the order is based on tests with water, however, the correspondence with that found with semen is not as good. For ranking by the time of production of 10 c.c. of gas and 1·3 c.c. of water compared with the ranking with the same amount of semen, the correlation co-efficient is 0·64.

1. Each of the times given in Table 1 for the production of 10 c.c. of carbon dioxide by semen is the average of two determinations, using semen from different donors. The median difference between the two determinations of each pair measured as the percentage of the mean of the pair, was 25.

It is of interest to note that of a brand of tablets those wrapped in metal foil, secured from a clinic, were more promptly active and gave a greater quantity of gas than others sent directly by the manufacturers in a bottle with a metal cap sealed with a plastic strip, and tested within a month of receipt.

Foam Production

The amount of foam produced by a vaginal foam tablet depends upon a balance between the production of gas and its escape into the surrounding medium. More rapid evolution of gas resulting from the use of larger quantities of water gives larger volumes of foam. For example, when foil packed tablets were moistened in a test tube of 22 mm. internal diameter with 0·1, 0·25, 1·3, 2·5, and 10 c.c. of water, the maximum foam produced measured 5, 17, 60, 82 and 93 c.c.

The area of the exposed surface of foam through which the carbon dioxide can escape, has an influence in the opposite direction. The same tablets, when 2·5 c.c. of water was added in tubes of 22, 24, 45, and 61 mm. inside diameter, produced foams of 82, 73, 61, and 53 c.c.

For valid comparisons of foam production, therefore, equal quantities of water and glass vessels of the same size and shape must be used.

When the maximum quantity of foam produced in the 22 mm. inside diameter test tube was observed, it was found that with 1·3 c.c. of

* The quantity of vaginal fluid when sexual desire is present is more than that found during ordinary gynaecological examination.—Ed., *J. Indian M. A.*

semen the sample of foil wrapped tablet produced 28 c.c. and that received in a bottle gave 21 c.c. For others, the quantity varied: with one brand it was 15 c.c., with 4 it was 10 c.c., with 4 others it was 5 c.c. while with 3 it was 3 c.c.

When 1·3 c.c. of water was used, the foam in the test tube reached a larger volume, perhaps because the more rapid evolution of gas allowed less time for its diffusion from the surface of the foam. Larger volumes of foam were produced with 2·5 c.c. of water, the order of the brands being about the same as with 1·3 c.c.

As an indication of the duration of the foam, the time was recorded when it had decreased to 10 c.c. after the application of 1·3 c.c. of water. This was 90, 60, 45, 30 and 7 minutes or less depending on the brand or brands investigated.

With a gas as soluble as carbon dioxide a durable foam is not to be expected. Surface tension causes a higher pressure in the smaller bubbles. There is a consequent diffusion of the gas, by solution in their walls, into the gas which is under lower tension in adjacent larger bubbles. A progressive shrinkage and disappearance of small bubbles occur with an accumulation of the gas into fewer and larger bubbles until the characteristics of a foam disappear.

The pH Resulting When Tablets are Moistened

To a tablet of each brand 2·5 c.c. of water was added. After 60 minutes the pH was measured with a glass electrode (Beckman model G meter). It was found to be 4·5, 5·5 and 8·1 for some and the remainder were between 6 and 8. Observations made 5 minutes after the water was added to the tablet were approximately the same as those after an hour.

Discussion

Clinicians will ask "Which of the qualities measured have the most direct connection with clinical effectiveness?" The small quantity of vaginal fluid found suggest that the tablets do not act through preliminary solution in this fluid. The stirring and solution resulting from the production of gas indicate that the tablets should be large enough to remain at least partly undissolved until the semen arrives. While the capacity to evolve a large quantity of carbon dioxide may be desirable, it is probable that only that portion produced in the early minutes after ejaculation will be protective. It seems, therefore, that a rapid evolution of carbon dioxide immediately after moistening with semen may be correlated with a lower pregnancy rate. Because of this presumption the various brands have been arranged in the table in the order of decreasing speed of evolution of the first 10 c.c. of gas.

While the production of foam is a special characteristic of the contraceptive tablets, the protective function of foam is not altogether clear. It may have some effectiveness in pushing masses of semen away from the cervix. The *in vitro* measurements of the duration of foam, showed that its effect is temporary. As the surface of the foam is exposed to the walls of the vagina over a large area and these may absorb the readily soluble carbon dioxide, the quantity and duration of foam in the vagina may be much less than that observed when a tablet is moistened in a glass tube.

The pH measurements, which for most brands are near neutrality, suggest that the spermicidal action is not due to acidity.

Since the foaming action on the arrival of the semen appears of importance, and the greatest effect of this will depend on the tablet being placed near the cervix and remaining there during coitus, it is suggested that there will be value in using two tablets, rather than one. This will increase the probability of a favourable anatomical location of one of them at the time of ejaculation.

Formulas of the Foam Tablets

A knowledge of the formula from which a contraceptive foam tablet is prepared is important to the clinician and to those making laboratory tests of them. No conscientious physician will expose his patient to a mixture of whose constituents he is ignorant. Furthermore, unless the formula is known there is no assurance to physician or laboratory worker that future supplies of the same brand will reproduce his earlier findings, since the formula may be changed. It must be recognized, of course, that such elements in preparation as the size of the particles in the constituent powders and the force with which they are compressed will influence the rate of gas production, and that these may be difficult to reproduce. With unknown formulas, however, reproduction is impossible.

Summary

Fourteen commercial brands of contraceptive foam tablets have been compared according to: (a) weight, (b) rate and quantity of evolution of carbon dioxide when moistened with semen or with water, (c) quantity and duration of foam produced, and (d) pH of the resulting solution.

Of these laboratory tests the rate of evolution of gas in the early minutes after moistening with semen appears to be the most indicative of clinical effectiveness.

The average quantity of fluid recovered from the entire vaginal wall was found to be 0·67 grams, suggesting that semen with an average quantity of 3 grams is the fluid chiefly responsible for the reaction of contraceptive foam tablets.

The use of two tablets is suggested to increase the probability of a favourable anatomical location at the time when the semen arrives.

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CASE NOTES

SPONTANEOUS INTRAPERITONEAL RUPTURE IN PYONEPHROSIS

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Spontaneous intraperitoneal rupture of a pyonephrotic kidney is a very rare event and has very infrequently been reported. James (1933) reported intraperitoneal rupture in a case of pyonephrosis due to impacted stone in the pelvis of the kidney. A similar case was cited by Convelaire (1935) quoted by Hashemian (1950). He reviewed the whole literature and found records of only seven other cases besides the one published by James (*loc. cit.*). Hashemian (*loc. cit.*) reported a case where rupture occurred, both intraperitoneally and extraperitoneally, from a pyonephrotic kidney. There was an aberrant renal artery and a vein, crossing the ureteropelvic junction. Considering the extreme rarity of such cases, it was deemed worthwhile reporting the following case.

CASE REPORT

B. M. G., 42 years, male, was admitted in Sambhunath Pandit Hospital, Calcutta, on 10-8-56, with a history of (1) remittent fever for 15 days, with wide fluctuations at times. The fever was associated with marked constitutional disturbances, headache and anorexia. There was no chill or rigor. There was history of diarrhoeic motions, 3 to 8 times a day, for the last 10 days, with scanty but frequent urination. Pain in the abdomen or heaviness in the loin was not complained of at the time of admission. There was nothing to suggest a stone or a renal colic. In the past, he had irregularity of the bowels and febrile bouts from time to time. He had no significant chest trouble in the past and no history of contact with tuberculous patients.

On examination the temperature was 102·6°F.; P/R—110/28, per min. The patient was sparsely built, thin, pale and anaemic. Abdomen—tympanitic ; caecal gurgling present ; descending colon thickened and tender. The liver and the spleen were just palpable and slightly firm ; both kidneys appeared enlarged, the left more than the right ; they were smooth and moving with respiration ; the left renal angle was tender. There was no rigidity or muscle guard either in the renal angle or in the abdomen. The heart and lungs revealed no abnormality. B.P. was 115/75 mm. Hg.

Laboratory investigations—Urine was alkaline, and contained a trace of albumen and fair number of pus cells. There was a growth of *Esch. coli* on culture, no acid-fast bacilli were seen in the centrifuged deposit.

Stool was liquid and alkaline in reaction and contained mucus and occult blood with no ova or cyst.

Hb.—65 per cent ; R.B.C.—3·8 million/c.mm.; W.B.C.—3,300/c.mm. with polymorphs 60 per cent, lymphocytes 38 per cent and monocytes 2 per cent. E.S.R.—38 mm. 1st hour (Westergren). Widal negative.

On the 9th day of admission, the patient began to complain of pain in the abdomen. The pain was vague, diffuse and constant and was accompanied by vomiting with troublesome retching, interpersed by hiccup from time to time ; stools became very frequent and involuntary ; urination became very scanty. The temperature showed wide fluctuations, with subnormal swings at times, with disproportionate tachycardia ; restlessness and exhaustion were evident ; abdomen showed diffuse tenderness and rigidity ; rigidity was more marked in the left flank and left side of the abdomen. There was dullness and auscultatory silence. The patient was treated on conservative lines and with streptomycin. His condition, however, went on deteriorating and he died on the 12th day of admission.

Autopsy—An examination was held 24 hours after the death of the patient. On opening the abdomen the peritoneal cavity was found to be

full of foul smelling pus. The stomach and the coils of intestine were grossly distended. There were no peritoneal tubercles. The right kidney was enlarged and congested, but the normal renal architecture was preserved with capsule stripping off easily ; no stone, tubercle, cavitation, caseation or cyst, could be seen ; the left kidney could not be identified, but on tracing up the left ureter, a very thin walled ruptured sac, with a wide tear could be seen in continuity with the left ureter ; no element of renal tissue was discernible in the sac. There was no stone and no aberrant renal vessel could be seen at the ureteropelvic junction. The pelviureteric orifice was patent but extremely narrow. Both the ureters appeared normal, without any dilatation or beading. Histological study did not reveal any evidence of tuberculous infection.

Comments

Possibly this was a case of unilateral hydronephrosis of the kidney which became pyonephrotic. The patient was admitted acutely ill and thus complete urological investigation by radiography etc. was not possible. Even though a rupture of pyonephrosis was clinically thought of, he was considered a poor surgical risk and any form of operative interference was deemed extremely hazardous. The rupture occurred presumably on the 9th day of admission (24th day of the illness).

Acknowledgment

I remain grateful to Dr. N. Das, Surgeon Superintendent, Sambhunath Pandit Hospital for allowing me to report the case and to Dr. S. L. Roy, Resident Surgeon for his help in carrying out the postmortem examination.

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PSYCHOGENIC ASTHMA

N. N. GUPTA, M.D., B. B. SETHI, M.B.B.S.

AND

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In recent years stress has been laid on the psychosomatic aspects of asthma. This does not mean that asthma is a 'psychic disorder'. Various factors play in the aetiology of bronchial asthma; of these the psychic influence is an important one. Some psychiatrists have described asthma symbolic of a 'cry for the mother' expressing the dependent type of personality make-up of the patient, he being placed in a situation where he feels helpless. Asthma is often the response to stress-producing life situations associated with frustration and tension, feelings of desperation and defeat, feelings of being left alone or neglected and insecure.

A typical case demonstrating the psychosomatic aspects of the disease is reported.

Case Report

A female patient, aged 35 years, married, was admitted on 19-9-1956 with complaints of periodic attacks of asthma every year in the rainy season, attacks starting in the month of *Savan* at night time. She was an illiterate woman of modest financial resources.

Events in life or diseases—In 1924, when the patient was 3 years old, her mother died in the month of *Savan* at night. In 1925 her father married a second time.

The patient was living in the joint family comprising of 2 uncles, 2 aunts, 3 male and 2 female cousins and the step-mother. The patient was brought up by an uncle and aunt mostly and was very much attached to one cousin. She felt extremely lonely and often helpless for having lost her mother and very often regretted 'I would have been much better brought up had my mother been alive.' When she was 15 years old she was married but the husband was away for two years and she continued to live in her parental house.

The uncle to whom she was greatly attached died in the month of *Savan*. In the words of the patient it was 'the greatest emotional shock of my life'. Fifteen days later one of her dear cousins died in the same month. She very pathetically remembers the above two deaths with the feelings of being left alone and helpless. In 1939, her first child, a son, was born. Another son was born in 1941 and a daughter was born in 1945. All are alive and healthy. She had two abortions one in 1943 and another in 1947. In the year 1953 (she was 32) due to failure of crops (her husband was a farmer) her jewellery were mortgaged due to financial crisis. Her husband's uncle who was of great help in previous financial crises also died. She had the first attack of asthma that year. Since then she had attacks of asthma in *Savan* every year at nights with bronchitis in between.

On examination she had only signs of chronic bronchitis without emphysema.

From the above history it is reasonable to feel that in the genesis of asthma psychosomatic

factors play a predominant role. Her attacks of asthma were precipitated only at the age of 32 because of accumulated psychical traumas. The first was when her mother died at the age of 3 years, the second when her uncle (really the father figure) died at the age of 15, the third when her dearest cousin died 15 days later and the last in 1953 due to the economic and domestic crisis as mentioned above. She was therefore left helpless and grief-stricken, hence the precipitation of the disease. The importance of *Savan* for her emotional life is equally clear.

Experimental production of asthma—Having observed that she got asthma in the rainy season and at about 10 p.m., the following plan was adopted:

A picture was specially painted depicting *barsat* (rain). On 8-10-1956 she was brought to the therapy room at 10 P.M. She was shown the picture of *barsat* under chemical hypnosis of sodium cyclonal. When suggested she agreed that it was raining but that she was not getting wet. One of us then brought some water from a tap and sprinkled a few drops on her. She then complained "I am getting bursting pain on the top of my head, neck, shoulders and legs. It is *Savan*". In a few moments she burst into asthma and said that her attack was there in its entirety. When asked to check the attack she expressed her inability to do so. At this stage the therapist, who had been attending her, asked her to lie down and gave her assurance that her attack of asthma would end. To the surprise of everybody standing around her, the asthmatic attack suddenly ceased. She was told in the morning that she got her asthmatic attack when it was neither *Savan* nor raining. The patient though illiterate understood the psychosomatic basis of her disease and hence was more amenable to treatment. She told the therapist that if she stayed with her son during the rainy season in future she might not get asthma again. This was arranged. No physical methods of treatment were employed in this case except a placebo of vitamin B complex. Her present attack was completely cured and when she left the hospital she had hardly any signs in the chest.

Conclusion

The case is an illustration of the present day views on asthma. It is advocated that not only drugs to give temporary relief to an asthmatic be employed but also a sympathetic enquiry made into the emotional life of the individual. In other words, the patient be treated not merely for the disease but as a whole.

HUNTINGTON'S CHOREA IN INDIA

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The diagnosis of this well-recognised degenerative nervous disease with its characteristic features of progressive choreiform movements, deterioration of the mind and heredofamilial incidence, presents no difficulty. It was, therefore, surprising to see five patients showing the typical features and another two without a positive family history, during 1952-54 at Amritsar for the first time (Chhuttani, 1955). A total of 38 cases was traceable from the five pedigrees reported: mental change and illiteracy interfered in elucidation of the family history. However, in the case of one paient it was possible to examine his family tree concerning 273 individuals over a period of 200 years bringing to light a total of 27 affected members of whom 9 were alive. New patients continue to be seen and this report describes 5 new patients apparently representing 4 further pedigrees.

Case Reports

Case 1—K. S., 50, from Amritsar district was admitted in June 1953 with the complaints of involuntary movements of the whole body and some difficulty of speech of 6 months' duration. The patient could not date his complaints accurately but his son put it to about 5 years earlier when irregular movements started in his right arm spreading to the other side in 2 to 3 weeks and then to the whole body. About a year and a half before admission the involuntary movements had increased. They were exaggerated by voluntary effort. It was difficult for him to do his work properly or even to eat his food. Of late he had noticed difficulty in speaking fluently. In the family history his parents had died of an unknown cause when he was very young. His four sons and one daughter were all healthy. One of his paternal aunts had similar trouble of involuntary movements for seven years before her death. One of his sons was interviewed and he told us that he had been noticing some mental deterioration in his father ever since the onset of his illness but we could not detect any noticeable change on clinical assessment of intelligence. The cranial nerves were normal and there was no motor or sensory deficit. Reflexes were normal but coordination was made defective by the marked irregular and spontaneous movements. No abnormality was detected in other systems.

Case 2—S. D., 30, originally from a village in Sialkot (West Pakistan), an overseer in M.E.S., was seen on 28-12-54, with the complaints of

spontaneous movements of five years' duration. These had been insidiously and progressively increasing in extent and for the past one year were widespread and marked enough to have incapacitated him from work. In the family history a sister of his grandfather had the same kind of movements in her old age for a number of years before she died. His father also had exactly the same disease for 5-6 years before his death at the age of about 55-60. The patient, a matriculate, showed no unequivocal evidence of mental deterioration. Cranial nerves, motor and sensory systems showed no abnormality. Routine laboratory investigation including a cerebrospinal fluid examination and serological tests against syphilis were normal.

Case 3.—S. S., 30, originally a farmer from Lyallpur (West Pakistan), was admitted to V. J. Hospital, Amritsar, in March 1956 with the complaints of spontaneous involuntary movements of a year and nine months' duration. These commenced in the right lower limb and spread all over the body. The movements had become so pronounced for the last one year that he could not do any work. Nor could he even take his food well. He also complained of defective memory which had been progressively deteriorating. His younger brother, aged 25 years, was suffering from similar trouble since 2 years. His mother and father died long time back of a short fever. No other member of the family was suffering from such a disease. He had had trouble with his right knee when he was a child for which he was admitted to a hospital but ever since his knee had got fixed. On examination he was dull mentally, for example he could not tell how many annas there were to a rupee but the cranial nerves and the motor and sensory systems were normal apart from the ankylosis of the right knee and wasting of muscles of the right lower extremity. No other abnormality could be detected in any other system. Laboratory investigations including a C.S.F. examination revealed no significant findings.

Case 4—S. S., 25, younger brother of Case 3 was admitted simultaneously, with the complaints of irregular spontaneous movements of the whole body of two years' duration. These started insidiously in the right lower limb and spread to the whole body within two months. About a year before admission his trouble had increased sufficiently to make it difficult for him to walk or eat his food well. His elder brother had noticed progressive mental deterioration in him ever since the start of the illness. On examination he was moderately built and well-nourished. There was an appreciable mental deterioration. He said his elder sister was 60 years old when in fact she was 45 years of age. He did not know how many seers there were to a maund, chattaks to a seer or pice to a rupee. He could not tell the day of the week. There was nothing abnormal in cranial nerves, motor or sensory systems. The tests of coordination were defective because of the superadded involuntary choreiform movements, which although widespread throughout the body were most marked in the face and upper extremities. Laboratory investigations including a C. S. F. examination revealed no abnormality.

Case 5—G. K., 37, housewife from Ludhiana was seen in October 1955 with progressively worsening spontaneous movements for the previous 9 months. The patient was unable to give a reliable chronological account of her illness but the mother dated it back to a number of years. The patient had been bed-ridden for 9 months. A brother, 18 years old, had had the same kind of movements for some time before he died of an unknown cause. Another sister started similar movements at 22 years but died after about 6 months again of an unknown cause. The patient showed marked choreiform movements throughout the body and was very slow in understanding simple conversation. There was no motor or sensory deficit in the nervous system. Other systems were also normal. She was reported to have died on 12-4-56.

Discussion

Although the disease has been described in Africans and Indonesians yet we could not trace any previous report in India except one by Ganguli (1956). It would now seem Huntington's chorea is not uncommon in the Punjab. In view of there being no specific treatment or hope of spontaneous cure and the fact that sufferers tend to have a large number of children (Playdell, 1954), the urgent need of imparting health education to the afflicted families, as the only way in which this pathetic illness can be prevented was stressed in a previous communication (Chuttani, 1955). The disease is likely to be reported from other parts of India as well since it is not to be expected that it is confined to one state : in fact we have already referred to a member of an affected family having migrated to Bengal nearly a hundred years ago.

Summary

Four further pedigrees of Huntington's chorea are reported with 5 case reports bringing the total so far traced in the Punjab to nine pedigrees and 48 patients. The urgent need of imparting health education to the afflicted families has been stressed.

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HORMONES AND LIVER DISEASE

The endocrinological aspects of liver disease have been the subject of numerous investigations during the last few years, although it must be appreciated that information on this topic is still in a state of flux. The increasing amount of data that has accumulated from these studies testifies to the interest in this subject and, perhaps, to its importance. However, apart from contributing to a better understanding of the complex relationship between the liver and the various hormones these studies have also emphasised the need for more precise quantitative methods of hormone assay and more satisfactory experimental procedures. Recently[1] in a systematic study of the role of the adrenal cortex in experimental and human liver disease definite evidence for adrenal damage in these disease states has been put forward. This work again brings to the fore the problem of the role of the hormones in the pathogenesis of hepatic diseases and the gaps in our knowledge of the same. Two aspects of the inter-relationship between the liver and the various hormones, viz., (i) the influence of the hormones on the liver and in particular, on the development of various hepatic disorders, and (ii) the role of the liver in the metabolism of the hormones have been the subject of study. Much of the evidence reported in the literature has been obtained in experimental studies but there is a limited amount of circumstantial evidence that certain of these hormonal influences operate in human liver disease.

The first indication that the endocrine glands had some influence on the development of dietary liver injury was provided in 1935[2] when it was observed that mortality was definitely less in the female rats, on a necrosis-producing diet. This difference was attributed to the direct or indirect action of the sex hormones. Subsequently this finding was confirmed[3, 4]. Following this earliest observation, numerous other studies have been carried out on the role of the oestrogens in various hepatic disorders.

It has been reported that when oestrogen pellets are implanted in the spleen of rats on a cirrhosis-producing diet, the severity of the cirrhosis is diminished[5]. Similarly, on exposure to carbon tetrachloride, female rats show better survival rate and less hepatic and renal injury than males[6]. A sex difference in the same direction has been reported for the development of lesions of cystine and choline deficiencies. These findings are in accord with the clinical observation that cirrhosis occurs 2 to 3½ times as frequently in men as in women in Europe and the United States.

Sex hormones also exert a marked effect on the development of spontaneous and chemically induced carcinoma of the liver in experimental animals. Perhaps the earliest observations in this direction were made in studies on spontaneous hepatomas in mice[7, 8], the incidence of which is much higher in males and is reduced by castration to approximately the level in females. Attempts to influence the incidence by administration of various sex hormones have led to inconclusive although suggestive results. Greater susceptibility of males has also been demonstrated in the case of liver tumours induced by various chemical carcinogens[9-11]. These data indicate rather convincingly that androgen stimulates and oestrogen inhibits hepatic carcinogenesis. It is of great interest in this connection that the incidence of liver cancer in humans exhibits a similar sex difference, the reported male : female ratio ranging from about 2 : 1 to 6 : 1[11, 12].

Adrenal cortical hormones also exert a profound influence on the liver, functionally and structurally. The liver is apparently dependent upon the adrenals for maintainance of many of its essential functions. The capacity of the liver cells to regenerate after partial hepatectomy is retarded by adrenalectomy and is restored to normal by administration of cortical extracts[10, 13]. Adrenalectomy lowers fat stores in the periphery

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as well as in the liver[14], and fatty liver produced by injection of pituitary extracts is abolished after adrenalectomy[15]. Replacement therapy with 17-hydroxycorticosterone (hydrocortisone) or desoxycorticosterone (DOCA) enables adrenalectomised animals to deposit fat in the liver. The glucocorticoids appear to be more active in this respect than mineralocorticoids[16].

Corticoids also have important actions upon hepatic architecture. In the rat DOCA causes hypertrophy and hyperplasia of the liver[10]; while heavy overdosage with cortisone causes involution and sometimes even focal necrosis of hepatic tissue in the rat[17]. The findings that adrenalectomised rats do not develop liver tumours with chemical carcinogens and usually little or no cirrhosis[18] have been contradicted[19]. It has been reported too that cortisone administration may actually accelerate the development of hepatomas in rats receiving these carcinogens[20]. However, interpretation of reported observations in all these cases is made difficult by the presence of accessory adrenal tissue and by the frequency of incomplete adrenalectomy.

The adrenal corticoids also promote protein catabolism by the liver thus accounting for the negative nitrogen balance associated with various "stresses" or with excessive adrenal hormone administration[21]. This action by the adrenal corticoids is antagonistic to the anabolic effect of insulin which appears to be exerted peripherally as well as on the liver[22]. The fact that ketone body formation[23] as well as the formation of carbohydrate from fat[24] by the liver may be influenced by cortisone administration is additional evidence of an adrenal cortical effect on the degradation and interconversion of foodstuffs by the liver.

The hormones of the pituitary exert a number of effects on the liver. Hypophysectomy causes a profound atrophy of the liver in all mammals, largely due to diminution of metabolism and food intake[25]. The rate of hepatic regeneration is also diminished by hypophysectomy in the rat[26]. It has also been observed that hypophysectomy prevented the development of cirrhotic and neoplastic changes in the livers of rats receiving carcinogens. Administration of growth hormone or ACTH restored the carcinogenicity of the dye; while cortisone and testosterone were ineffective[9, 19]. In the light of the known metabolic actions of growth hormone and of the products of the target organs of the pituitary (e.g., adrenal, gonads) it is not surprising that the liver as well as other tissues should be affected by removal of this gland, or by administration of its hormones.

Thyroidectomy has been shown to retard and thyroid feeding to accelerate the development of hepatic necrosis associated with choline and cystine deficiencies[27]. It has been observed that certain goitrogenic compounds such as thiouracil and its derivatives in fact exert a protective effect against dietary cirrhosis in experimental animals[28]. A similar protective effect of these compounds against hepatic carcinogens has been found[29]. In these studies, the influence of altered intake of food, under the varying conditions employed, has not been taken into consideration and this aspect of the problem merits further study.

Relatively fewer studies have been carried out on the action exerted by insulin on the liver. But it is known that alloxan-diabetic rats do not develop liver tumours as readily as normal animals[30] and also that in these rats the growth of transplanted hepatomas is inhibited[31]. The possible influence of nutritional disturbance in such animals imposing metabolic restrictions on neoplastic development and growth remains to be investigated.

It is clear from the numerous studies cited above that the various hormones exert a profound influence on the development of morphological abnormalities in the liver in certain species including fatty liver, cirrhosis and malignancy. In evaluating the clinical significance of these findings, however, it must be remembered that there is a wide species difference in the metabolic

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effects of the hormones. The need for parallel studies in clinical liver disease, therefore, hardly needs any special emphasis.

The second aspect of the relationship between the liver and the various hormones concerns the role of the liver in hormone metabolism. From the large number of studies reported in the literature, there is little doubt that the liver has an important role to play in the intermediary metabolism of the hormones. The functional activity of the liver in this respect is directed towards prevention of abnormally high levels of hormonal activity in the systemic circulation. The liver appears to maintain steroid hormone homeostasis in a number of ways as follows—(*i*) removal of hormones from the systemic circulation, (*ii*) conversion to less active or inactive metabolites, (*iii*) conjugation (e.g. sulphate, glucuronate etc.) which facilitates aqueous solubility and hence subsequent urinary excretion, (*iv*) excretion in bile, and (*v*) enterohepatic circulation. The predominance of one or more of these phenomena appears to vary with the individual hormones and with different species.

It was observed for the first time in 1934 that *in vitro* the liver inactivates 80-90 per cent of added oestrogen[32]. It was subsequently shown that this hormone was destroyed by perfusion through a heart-lung-liver preparation but not through a heart-lung preparation. These findings have been abundantly confirmed and in particular by more recent studies using C^{14}-labelled oestrogens and refined analytical techniques[33, 34].

It has been demonstrated in the course of experimental studies[35, 36] that the adrenal corticoids are inactivated by the liver. On incubation with liver, testosterone is converted into compounds with no biological activity and in part to 17-ketosteroids, with lower androgenic activity.

In most species, the hormones are largely excreted in the urine as conjugated forms and there is little doubt that this conjugation occurs mainly, if not exclusively, in the liver. However, it has not been possible so far to demonstrate this important phase of hormone metabolism owing to the marked degradation processes occurring simultaneously.

Studies of the effect on target organs of implantation of gonads or hormone pellets in the portal area (spleen, mesentery) in gonadectomised animals also support the concept of hormone inactivation by the liver[37, 38]. Similar findings have been reported with androgens[39].

Recent work using C^{14}-labelled hormones have confirmed the hypothesis advanced earlier, that biliary excretion with subsequent enterohepatic circulation constitutes another important phase of hormone metabolism involving the liver[40, 41].

The effects of induced liver damage, partial hepatectomy and bile-duct ligation on hormonal activity in the systemic circulation and urinary excretion of these hormones also support the concept that the liver is of fundamental importance in the maintenance of steroid hormone homeostatis[42-44].

Attention has been drawn to the importance of nutrition in maintaining the functional and structural integrity of the liver particularly in relation to steroid hormone metabolism[45]. The vitamin B-complex, especially thiamine and riboflavin and methionine are apparently necessary for normal hepatic control of the hormones and in particular for maintaining the normal balance between androgens and oestrogens.

It is not clear how far these observations made in experimental studies are applicable to man. Studies of arteriovenous differences have provided, however, evidence of comparable hepatic removal of administered corticosteroids in man and dog[46]. Moreover, the prevailing view that biliary excretion of hormones is of relatively minor importance in man has been refuted recently by the recovery of significant amounts of oestrogen in the bile of women during

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pregnancy and following administration of oestrogen[47].

In the light of what has been said above concerning the role of the liver in hormone metabolism, it is not surprising that clinical signs and symptoms suggestive of hormonal imbalance have been repeatedly observed in human liver disease since the classical studies[48] in 1908. Gynaecomastia, testicular atrophy, loss of libido and sexual impotence in man, and menorrhagia, amenorrhoea and sterility in women have been the common manifestations reported in clinical cases of cirrhosis and infectious hepatitis. Several attempts have been made by assay of hormones in the urine to establish that these conditions arise as a result of impaired hormone metabolism by the diseased liver. Abnormally high urine oestrogen values have, in fact, been reported in numerous studies in cases of cirrhosis[49-51] and infectious hepatitis[52, 53]. However, it has not been possible to demonstrate so far any consistent correlation between severity of hepatic disease and disturbances in oestrogen metabolism, thus suggesting that other factors also may be involved in this phenomenon.

Urinary gonadotrophin excretion appears to be rather consistently decreased in subjects with hepatic diseases such as cirrhosis, infectious hepatitis and malignancy[50, 54, 54]. It has been suggested that this results partly from depression of pituitary activity caused by increase in circulating oestrogens and partly from the condition of undernutrition that is frequently associated with longstanding hepatic disease. There is evidence that the Sertoli cells of the testis, the main source of oestrogens, remain relatively intact or may even be hypertrophied in the absence of gonadotrophins, despite atrophy of tubular and Leydig cells and this may explain the high urine oestrogen values in the presence of diminished gonadotrophin excretion.

The urinary 17-ketosteroids are rather consistently low in cases of cirrhosis and infectious hepatitis[50, 53, 55]. Some of the mechanisms that have been suggested to explain the low level of 17-ketosteroids are: (*i*) decreased pituitary gonadotrophic hormone production, with secondary decreased production of testicular androgen (testosterone), (*ii*) decreased conversion of adrenal cortical hormones to 17-ketosteroids by the liver, (*iii*) decreased conversion of testosterone to 17-ketosteroids by the liver and (*iv*) adrenal hypofunction.

Decreased levels of urinary androgens in cirrhosis of the liver, probably resulting from the lowered gonadotrophic hormone production have been reported[56, 57]. But the depression of 17-ketosteroid excretion appears too great to be explained on this basis alone since most of the 17-ketosteroids arise as a result of adrenal activity.

Evidence has been obtained to show that subjects with hepatic disease exhibit a decreased capacity to convert testosterone[58] and adrenal corticoids[59, 60] to 17-ketosteroids. It has been found that in subjects with cirrhosis, administration of ACTH or adrenocortical hormones is followed by an increase in urinary corticoids but little or no increase in 17-ketosteroid excretion; while in normal subjects there is an increased excretion of both these constituents. The removal of exogenous adrenal corticoids from the circulation[61] and the capacity for conjugating such steroids[62] are also impaired in liver disease.

There is still considerable controversy regarding the functional status of the adrenal gland in hepatic disease. Urinary 17-Hydroxycorticosteroids have been reported to be decreased in cirrhosis[61] and this in presence of normal plasma levels of the steroids was taken as indicative of decreased adrenal secretion of these hormones. Similarly diminution of urinary corticoid excretion in some cases of cirrhosis was noticed[63]. However, using less specific methods of assay, increased corticosteroid excretion has been report-

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ed in liver disease[60, 62, 64]. On the other hand, the urinary excretion of these hormones has been found to be grossly normal in patients with portal cirrhosis[65]. Occasional normal values for patients with Addison's disease as well have been reported[65].

Detailed studies of salt and water metabolism in portal cirrhosis[66] have shown marked abnormalities characterised by extreme renal retention of water and sodium. In addition low saliva and sweat sodium values are also found indicating a mechanism of generalised sodium retention. Patients with cirrhosis and hepatitis also fail to show the normal diurnal rhythm in water and electrolyte excretion. These abnormalities are explained to a large extent by the recently obtained evidence of increased urinary aldosterone (salt-retaining adrenal hormone) excretion in cases of cirrhosis[67-69] which is suggestive of over-production of this hormone by the adrenal cortex. Other factors which could contribute to the ascites formation are: (*i*) increased antidiuretic hormone activity either due to defective destruction by the liver[70] or excessive production, (*ii*) increase in portal venous pressure, (*iii*) decrease in plasma albumin, leading to low cellular osmotic pressure[71], and (*iv*) excessive circulating oestrogens[72]. It is not yet clear which of these various factors initiate the ascites formation although there is little doubt that they contribute to the perpetuation of it. The consensus of opinion at the present time appears to be that the elevated portal pressure and hypoalbuminaemia first lead to transudation of fluid from the circulating blood into the peritoneal cavity. The resulting decrease in plasma volume and sodium concentration provides the stimulus for the increase in circulating levels of antidiuretic hormone and aldosterone as homeostatic responses.

Low salt diets have been used for many years in the treatment of ascites in patients with cirrhosis with a good measure of success[73, 74] and actual termination of ascites formation with progressive rise in the serum albumin and sodium concentrations has been reported in the cases studied[74]. This still remains the treatment of choice, in conjunction with paracentesis, in cases of cirrhosis of liver with ascites.

If there is adrenal hyperfunction in cirrhosis, it appears to be restricted to the 'salt-retaining' factors (such as aldosterone and desoxycorticosterone), since no other clinical manifestation of adrenal overactivity has been observed in these cases, except in one rare group of women[62]. The face does not become mooned, there is no cervicodorsal hump and acne is rare. Females do not get masculinised and body hair becomes scanty rather than excessive. Hypotension is the rule rather than hypertension[75]. It is also common clinical experience that patients with liver disease tolerate surgery poorly[75] and this is similar to the behaviour of patients with impaired adrenal cortical function[76]. Several reports have also appeared confirming the beneficial effects of ACTH and cortisone therapy in portal cirrhosis and infectious hepatitis[77-80] although a number of undesirable side-effects have also been observed. This is suggestive of an underlying adrenal deficiency. In a recent study[1] employing a battery of adrenal function tests, evidences for deranged adrenal function in experimental and human liver disease have been obtained.

To conclude, there is increasingly impressive evidence that significant disturbances of endocrine physiology occur in clinical liver disease. These are in directions that would be anticipated on the basis of data obtained in experimental studies, although the exact mechanism of their production still remains obscure. With improvements in the presently available techniques for detecting these endocrine abnormalities, there should follow a better understanding of the factors influencing the pathogenesis of human liver disease.

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CURRENT TOPIC

WORLD HEALTH ORGANIZATION

I. How and Why WHO Came into Being

The creation of the World Health Organization, in 1948, was the culmination of a long series of efforts made over the centuries to prevent the spread of disease from one continent to another and to achieve international co-operation for better health throughout the world.

There is evidence that medicine was practised in the most ancient civilisations, first of all to relieve individual suffering, but it assumed a communal aspect with the creation of the first hospitals, more than a thousand years B.C. according to certain sources.

Appalled by the ravages caused, in the Middle Ages and after, by epidemics of plague and cholera, the healthy tried to protect themselves by setting up barriers against disease within their own frontiers: isolating infected towns and villages; establishing quarantine stations; refusing to allow ships with sick persons on board to dock; and exacting the death penalty for offences against quarantine regulations.

In 1851, the first International Sanitary Conference met in Paris to attempt to establish international regulations for the protection of populations against pestilential diseases. It was not until 1892, however, that 14 European countries signed the first international convention establishing stringent regulations to control the spread of cholera. The discovery, at the end of the nineteenth century, of the way the major pestilential diseases (plague, cholera, yellow fever) are transmitted, and of means of preventing them, opened up new possibilities for international co-operation in the field of health.

In 1902 and 1907, respectively, the Pan American Sanitary Bureau, (Washington) and the Office International d'Hygiène Publique (Paris) were founded, their original task being to watch for and report on the outbreak of pestilential diseases, and to ensure the effective application of the international sanitary conventions.

In 1920, when epidemics of typhus and cholera followed the disruption of life in Eastern Europe resulting from the first World War, the League of Nations created first an Epidemic Commission and, subsequently, a Health Organization which concerned itself not only with major disease problems but also with studies on nutrition, housing, and the standardization of therapeutic substances.

After the Second World War, when the Charter of the United Nations was drawn up in San Francisco (1945), Brazil proposed that health should be included in the U. N. Charter as one of the vital factors for the stability and well-being essential for world peace.

The World Health Organization was set up the following year in New York, and gradually absorbed the existing international health organizations (Office International d'Hygiène Publique, Health Organization of the League of Nations, UNRRA Health Division). The Pan-American Sanitary Bureau retains its name and individuality while acting as the WHO Regional Office for the Americas.

The two fundamental principles which inspire the work of the World Health Organization are defined in its Constitution as follows:

Universality: "The health of all peoples is fundamental to the achievement of peace and security. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition".

Concept of Health: "Health is state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

II. How WHO Works

According to its Constitution, the World Health Organization is "the directing and co-ordinating authority on international health work". It is not a supra-national health authority but is at the service of national health administrations to help them improve the health of their peoples.

The World Health Organization derives its authority from the 88 Member States which, since 1946, have ratified its Constitution. Regional WHO programmes are endorsed every year at meetings of the Regional Committees attended by representatives of Member States in each of the six WHO Regions: South-East Asia; Eastern Mediterranean; Americas (Pan American Sanitary Bureau); Western Pacific; Africa; Europe. These regions were established on the basis of the geographical, ethnical and social propinquity of their member countries.

During these Regional Committee Meetings, member countries put forward requests for assistance with health problems which require international aid. The WHO Regional Directors—responsible for operations within their Regions—consolidate these requests, and report them to the World Health Organization headquarters in Geneva, a true nerve centre of international health work. In Geneva, the Director-General of the World Health Organization co-ordinates all the regional programmes in a single programme of WHO activities, and estimates the budget required for its implementation. The resulting "Programme and Budget" is then scrutinised by the WHO Executive Board, composed of 18 international health experts, designated by, but not representatives of, their governments. After the Executive Board has reviewed the Director-General's proposals, these are submitted to representatives of the 88 Member States at the annual World Health Assembly who, in turn, study them, criticize them, modify them and, finally, approve a programme of world health activities for the following year, together with the necessary budget (10,700,000 dollars for 1957).

The types of assistance which WHO renders to governments may be for:

strengthening national health services;
establishing and maintaining epidemiological and statistical services;
controlling epidemic and endemic diseases;
maternal and child health;

promotion of mental health to foster harmonious human relations;

improvement of sanitation and of preventive and curative medical services.

Furthermore, WHO Member States benefit from its technical services (epidemiological intelligence, international quarantine, world health statistics, international standardization of therapeutic substances, technical publications). The day-to-day work of the World Health Organization (technical and administrative) is carried out by a Secretariat comprising about 800 international officials of 54 different nationalities—stationed at headquarters in Geneva, at Regional Offices, or with field projects operating in every continent. The Director-General is Dr. M. G. Candau (Brazil).

III. Services to all Countries

Central Technical Services—These form the backbone of international health activities, and benefit all countries alike. Some of them were taken over from earlier international health organizations and have since been developed and extended by WHO. They include:

Epidemiological Intelligence and Quarantine—The adoption of the International Sanitary Regulations (1952), which replaced thirteen out-of-date conventions, is one of WHO's important accomplishments. These apply to land, sea and air traffic throughout the world. They provide the maximum protection against epidemics with minimum interference in international transport and travel.

The Epidemiological Intelligence Service collects information about the occurrence of pestilential disease anywhere in the world, and broadcasts it daily over an international radio network to health authorities, ports, airports and ships at sea.

Health statistics—International health legislation, promulgated by the World Health Assembly, provides for uniform notification of diseases and causes of death, thereby making it possible to evaluate health problems more accurately and, therefore, to adopt more effective public health measures. The list established by WHO comprises 999 categories of diseases, injuries and causes of death.

Standardization of therapeutic substances—Another important aspect of WHO's work is to recommend international standards for therapeutic substances. WHO has published the first International Pharmacopoeia which contains recommended specifications for use in all countries. WHO participates in international efforts for the control of drug addiction, and makes studies on new synthetic drugs liable to produre addiction, and on alcohol.

Atomic energy and health.—The World Health Organization has been instructed by its Member States to study the health problems which arise from the use of atomic energy. Although the peaceful application of atomic energy will improve living conditions, it contains a threat to health—both to the health of workers in atomic establishments, and to that of the general public, as the amount of background radiation increases with the development of this source of power. Radioactive wastes, if not carefully disposed of, may dangerously pollute the air, soil and water, and radiation may even have harmful effects on the heredity of the human race. It is to provide protection against these dangers that WHO has been requested to collect information and to convene meetings of experts in order to be able to advise governments and public health services on the measures to be taken, in co-operation with the atomic energy industry, so that the health of the people shall not be menaced by a form of progress destined to improve living conditions.

Health Laboratory Methods—WHO helps to establish public health laboratories, promotes simplification and standardization of techniques and diagnostic methods, and co-ordinates research on various laboratory investigations, including the potential dangers of chemical additives to food.

Publications and documentation—WHO collects documentation on problems relating to health. It produces a considerable number of technical publications in the fields of health and medicine.

IV. Requests from Countries

Three major diseases in retreat—The principal task of WHO is to assist all countries to strengthen their health services. It has launched international campaigns against three major diseases which are widespread, but which can be controlled by the use of modern techniques placed at man's disposal by the progress of science. At the request of governments, WHO mobilizes widely-experienced specialists and technicians to show how these diseases can be combated. Subsequently, the countries themselves continue the work with WHO assistance and advice.

Malaria—About one quarter of the world's population lives in malarious regions. A race against time has to be undertaken if these are to be cleared of the disease before the mosquitoes which transmit it become resistant to insecticides, such as DDT. In 1955, the World Health Assembly decided to embark upon a world-wide campaign to eradicate malaria, and created a world anti-malaria fund, to enable WHO to increase material and technical assistance to countries fighting this scourge. At the present time, WHO is participating in 47 anti-malaria projects.

Tuberculosis—At least five million persons die every year of tuberculosis, and hundreds of millions suffer from it. WHO is helping to establish tuberculosis control programmes in about 30 countries, and it has set up many demonstration and training centres. Vast BCG vaccination campaigns are being carried out: by 1956 more than 160 million people had been tuberculin tested and more than 60 million vaccinated, through the joint efforts of governments, WHO and UNICEF. The Tuberculosis Research Office, established by WHO in Copenhagen, analyses data relating to mass BCG vaccinations. Finally, WHO co-operates in essential research on the possibility of using the new anti-tuberculosis drugs in large-scale campaigns based on home treatment rather than hospitalization.

Venereal diseases and Yaws—Penicillin has proved its value as the public health weapon of choice against

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syphilis and other related, but non-venereal, diseases such as yaws, bejel and pinta—debilitating and often crippling tropical diseases. Tens of millions of persons have been examined and treated during mass campaigns.

WHO wages war against 40 other diseases—Forty other communicable diseases take a heavy toll of humanity in suffering and economic and social damage. WHO assists in numerous campaigns for the control of trachoma, leprosy, rabies, yellow fever, plague, and many parasitic diseases. Medical research is stimulated and co-ordinated in WHO centres and laboratories: the World Influenza Centre in London directs a network of influenza laboratories in 45 countries, and there is a similar network for poliomyelitis. Brucellosis, or relapsing fever, is also studied in 14 laboratories, assisted by WHO. For the control of communicable diseases as a whole WHO acts as an international clearing house which makes the latest scientific information freely available.

Public health administration—WHO makes surveys and studies of public health needs and of available facilities, and advises on the structure of preventive and curative medical services, co-ordination of various types of public health and medical services, rural health services, etc.

Nutrition—In a number of countries, malnutrition of infants after the weaning stage is a serious problem—lack of proteins being the main cause. In this field, one of WHO's principal concerns is the prevention of malnutrition due to protein deficiency.

Mental Health—WHO's aim is to integrate mental health into public health programmes. The Organization provides services in the fields of mental health training, psychiatry, psychiatric nursing and alcoholism. Important studies have been published by WHO on the subjects of maternal care and mental health, juvenile delinquency and various aspects of alcoholism.

Maternal and Child Health—Together with UNICEF, WHO participates actively in programmes for the training of physicians, nurses and auxiliary personnel for maternal and child health centres. WHO also assists in the rehabilitation of physically handicapped children, care of premature infants, school health, etc.

Nursing—WHO helps a number of countries to develop training courses for nurses and to strength schools of nursing. Nurses are attached to many of the WHO teams working in the field.

Health Education of the Public—If health measures are to be successful, the general public must take an interest in them, understand them, and actively participate in them. WHO assists countries to establish health education services, taking into account the needs as well as the social and cultural traditions of their populations.

Social and occupational health—WHO gives assistance in the establishment of industrial health services, the organization of hospitals and medical care, rehabilitation of physically handicapped persons, health services for seafarers, etc. Close collaboration is maintained with the International Labour Organization in this field.

Environmental sanitation—Environmental sanitation, which is the keystone of public health, is included in most WHO programmes and is given high priority. It deals with (1) waste disposal; (2) pure water supplies; (3) pure milk and other food; (4) control of insects, rodents and other carriers of disease; (5) housing—rural as well as urban; (6) protection against contamination and lack of sanitation.

WHO emphasizes the basic need for improving rural sanitation and has published handbooks on pure water supplies and waste disposal for rural areas.

More health personnel—Almost everywhere, there is a serious shortage of physicians, nurses, sanitary engineers, laboratory technicians and other health personnel. WHO, therefore, endeavours to increase their numbers and to raise their professional standards. It has awarded more than 5,000 fellowships for international study to health personnel from seventy countries. In this field also, the Organization assists with the establishment of schools of public health, finances study tours by public health administrators, sends out teams of medical scientists, sets up centres for training in anaesthesiology and other medical specializations, organizes scientific meetings and international conferences on a great variety of health subjects, and makes available teachers and lecturers to schools of medicine, of nursing, and of public health.

V. WHO IN SIX CONTINENTS

WHO's global headquarters are at the *Palais des Nations* in Geneva but, to make its work more effective, six regional offices have also been established, as follows:

Africa—The Regional Office for Africa (south of the Sahara) is at Brazzaville (French Equatorial Africa). Chief problems in this Region, which has a population of 160 million: nutrition, leprosy, yaws, malaria.

Americas—The Pan American Sanitary Bureau which is also the WHO Regional Office for the Americas, is in Washington D.C. (U.S.A.). Chief problems in this Region of 326 million inhabitants: strengthening basic public health services, professional training, malaria, yellow fever.

South East Asia—The Regional Office for South East Asia is at New Delhi (India), Chief problems among the Region's 500 million population: strengthening basic health services, malaria, yaws, tuberculosis.

Europe—The Regional Office for Europe is also at Geneva (Switzerland) but will be transferred to Copenhagen (Denmark) in 1957. The Region has a population of 610 million. Chief problems: co-ordination of health-policy, heart disease, alcoholism, mental illness.

Eastern Mediterranean—The Regional Office for the Eastern Mediterranean is at Alexandria (Egypt). The population of this Region numbers 167 million. Chief problems: strengthening of health services, training of health personnel, malaria, tuberculosis, trachoma.

Western Pacific—The Regional Office for the Western Pacific is at Manila (Philippines). Chief problems in this Region which has 633 million inhabitants: sanitation, training of health personnel, communicable diseases.

NOTES AND NEWS

International College of Surgeons

World-renowned surgeons from five continents will be on the scientific programme of the 22nd annual Congress of the United States and Canadian Sections, International College of Surgeons, to be held in the Palmer House, Chicago, September 8—12, 1957.

Besides a General Assembly, there will be section of programmes.

Dr. Raymond W. McNealy, Chicago, is the general chairman of the Congress. Further information may be had by writing to Dr. Ross T. McIntire, executive director, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois.

Employment Status of Doctors in Second Five Year Plan

At the last I.M.A. Working Committee meting held at Patna on the 20th and 21st April, 1957, it was decided to send a questionnaire to all State/Territorial Branches, to obtain data regarding the overall position of employment/unemployment amongst doctors and relevant matters in the respective States with the idea of formulating a State/National policy in this regard and take possible steps as the situation warranted.

A proforma indicated for the purpose, has been sent with the request that the same be filled up in the appropriate way and returned one each to the Central Office and to the Convener, IInd Five Year Plan Standing Committee, c/o. Indian Medical Association, 67, Dharmatala Street, Calcutta 13.

As it is intended to take up the matter during the next meeting of the Working Committee, Hony. Secretaries of all State/Territorial Branches of the I.M.A. are requested to return the proforma duly completed by 15th September, 1957, along with any other remarks on the subject to the Hony. General Secretary, I.M.A., Hanging Bridge, Daryaganj, Delhi 7.

INDIAN MEDICAL ASSOCIATION

Proforma for collection of data regarding employment of doctors

1. Name of the State/Territory
2. Total population—
   Rural
   Urban
3. Number of qualified doctors
4. Number of medical colleges
5. Average number of doctors qualifying every year
6. Distribution of doctors—
   (*i*) Rural areas
   (*ii*) Urban areas
7. Nature of underemployment, if any and amongst whom (general practitioners and specialists)—a detailed report on this item would be very helpful. (The word 'unemployment' has not been mentioned as all doctors do some kind of professional work)
8. Average income of a doctor in the rural areas
9. If rural areas are inadequately served what are your suggestions to get over the difficulty?
10. Is the State Government utilising the services of 'doctors' of other systems of medicine, if so, how are they employed? Please give details.
11. Are there any recognised Ayurvedic/Homoeopathic Colleges? If so, how many persons are coming out of these institutions in a year?
12. Number and nature of rural medical relief centres. What is the average population served by each? Are these in any way linked up with higher centres of medical relief?
13. What are the main health projects taken up under the 2nd Five Year Plan and whether they are in conformity with the objectives set up in the plan itself.

NOTE: Any other information considered important and not covered by the questionnaire may be supplied.

Madras Medical Register

The Registrar of the Madras Medical Council has issued the following:

"It is very essential that in the interests of both the practitioner and the Medical Council, the Madras Medical Register should be up-to-date in all particulars relating to the practitioner entered therein, including his address and qualifications. In connection with the recent elections held in November 1956 to elect 7 members by the Registered Practitioners, 9200 ballot papers were sent, out of which, 1220 were returned as unknown or dead by the Post Office. Several requests were received to send ballot papers from individuals whose address did not agree with the one found in the 1955 Medical Register which served as the electoral roll and it was not possible to comply with their request as ballot papers had already been issued as per the printed address in the register. To avoid a repetition should any election take place in the near future and also to serve as a useful guide to the pharmaceutical firms which utilise the Register for sending medical literature, the Registrar, Madras Medical Council, Madras 6 earnestly requests all the registered practitioners to drop a card immediately giving particulars about their full registered name, and number and address. They may also register an additional qualification since secured."

Eminent Biologist in Calcutta

The 64-year old eminent British scientist, Prof. J. B. S. Haldane, arrived in Calcutta with his wife from London on 25-7-57 with the intention of permanently settling in India.

The renowned biologist will resume his work at the Indian Statistical Institute, Calcutta, where his wife, Dr. Helen Spurway, has also got a teacher's job.

Kurnool Medical College Opened

Mr. T. T. Krishnamachari, Union Finance Minister, in inaugurating the Kurnool Medical College, the first of its kind in Rayalaseema, said that the authorities

should understand the importance of environmental hygiene and preventive medicine and that conditions should be made attractive for doctors to set up practice in rural areas without running the risk of turning out to be third-rate general practitioners.

The college is affiliated to the Sri Venkateswara University.

Uttar Pradesh Medical Council

At a meeting of the Uttar Pradesh Medical Council held at Lucknow on March 28, 1957, it was decided that no medical officer can refuse, on religious grounds alone, to give assistance in or conduct cases of sterility, birth control craniotomies on living children and therapeutic abortions when medical indications exist for the same. It was resolved further that a suitable rule be added in the code of medical ethics.

Added Facilities for Treatment of Mental Diseases and Cancer

An out-patient department as annexe to the Hospital for Mental Diseases, Kanke, Ranchi, has been opened recently. Early mental cases will be treated. Psychotherapy and in some cases psychoanalysis will also be done. Medical practitioners will be allowed to visit and see treatment being done so that they can carry on psychotherapy by themselves. There will be no charges for the treatment. The out-patients department will be open on Tuesdays and Thursdays in the evening but urgent cases may be referred from 9 to 12 noon in the morning in any of the working days.

The Government of West Bengal has been maintaining 30 additional free beds in the Chittaranjan Cancer Hospital, Calcutta since 10-7-57. The selection of patients for admission into these beds is made by a committee of three including the Deputy Director of Health Services, West Bengal.

CORRESPONDENCE

The Editor is not responsible for the views expressed by correspondents

'Fight against Tuberculosis in India'

SIR,—I would like to draw your attention to a factual error in the otherwise candid review of my book 'Fight Against Tuberculosis in India'. In my own plan for anti-tubercular measures I have vehemently stressed the need for rapid increase in the number of hospital beds for tuberculosis, and with that end in view, I have suggested the addition of 25,000 beds per annum for five years (1,25,000 beds in total) with the assumption that each bed will serve 3—4 patients during the year. The reviewer, however, asserted that in the second five year plan, a provision for adding 15,000 beds 'per annum' has already been incorporated. This assertion is basically untrue. The fact is that the second five year plan has provision for adding only 15,000 beds during the whole five years and not 'per annum'. I am etc.

G. GOEL,
B.SC., M.B.B.S., D.T.D.

Mathura.

The misstatement in the review regarding '15,000 beds' is regretted.—ED., *J. Indian M. A.*

REVIEWS

Pulmonary Carcinoma—Pathogenesis, Diagnosis and Treatment—Edited by Edgar Mayer, M.D. and Herbert C. Maier, M.D. New York University Press, New York. London: Pitman Publishing Co. Ltd., 1956. Pp. XVI and 540.

The book consists of twenty chapters with one appendix. Though some of the chapters might have been dealt with more critically, all of them are well balanced regarding the subject matter. This book deals with original work and gives thought provoking information. Chapters on psychological aspect of lung cancer and the appendix dealing with pitfalls in diagnosis and lessons learned in retrospect are valuable inclusions. One desiring to acquaint himself with upto date knowledge of lung cancer will find this book very useful. Thus it will be profitable to possess such a treatise by all ranks of readers including practitioners, students and research workers.

The Text Book of Medicine—Edited by Sir John Conybeare and W. N. Mann. E. & S. Livingstone Ltd., Edinburgh. 12th Edition, 1957, 9½" × 6½", pp. 859+xvi. 42 *sh.*

It is a well balanced and comprehensive text book of medicine. Many of the chapters have been entirely recast or suitably altered in the present volume. The book is easy reading. A good book for the students for basic knowledge. The printing is excellent and the price moderate.

Tuberculosis in the Commonwealth, 1955—Published by the National Association for the Prevention of Tuberculosis, London.

This volume is a record of the transactions of the Fourth Commonwealth Health and Tuberculosis Conference held in London in June 1955. Representatives from 60 countries attended the conference. These included not only medical men but tuberculosis workers of all categories such as social and voluntary workers, health visitors, sanatorium matrons and nurse teachers, organising secretaries and other staff of tuberculosis associations.

The volume contains considerable material of great value to all tuberculosis workers who want to get an overall picture of tuberculosis as a living problem and the various ways in which it is tackled in various countries. Some symposia specially on differential diagnosis and choice of drugs in the treatment of pulmonary tuberculosis and on tuberculosis and leprosy are of special value.

OBITUARIES

Dr. Y. B. Mahabal, M.B.B.S.

Dr. Y. B. Mahabal was born at Adra in 1926. He passed the I.Sc. examination in 1948, joined the Medical College, Nagpur, in 1949 and obtained the M.B.B.S. degree in 1955.

DR. Y. B. MAHABAL

Dr. Mahabal was a house physician at the Wadia Hospital, Sholapur, for six months. In 1956 he decided to start private practice at Shahdol, M.P. and in a short time made a good name as a clinician. He was a member of I.M.A., Bilaspur branch. He was very amiable and kind hearted. Dr. Mahabal died on 3rd June 1957 after a short illness at the early age of 31.

May his soul rest in peace!

Dr. Panchugopal De, B.Sc., M.B.

Dr. Panchugopal De was born at Serampore in the district of Hooghly in West Bengal in 1901. He passed the Matriculation examination from the Training Academy, Hooghly, in 1919 and Intermediate Science in 1921 and B.Sc. with Honours in Physics from the Presidency

DR. PANCHU GOPAL DE

College in 1924. He obtained his M.B. degree from the R. G. Kar Medical College in 1930. He worked as a house physician under Dr. B. C. Roy at the same institution.

Dr. De practised at Bhatpara since 1932. He was a member of the Jagatdal branch, I.M.A. and was connected with various public institutions. He died on 15 June, 1957.

May his soul rest in peace!

A CORRECTION

P. 482, col. 1, lines 3 and 4: *In place of* ".....In this country zinc jambolana[1] and *pterocarpus marsupium*[2] ....." *please read* "..... In this country zinc[1], jambolana and pterocarpus marsupium[2] ....."

Reference no. 1 in the corresponding footnote should read AJGAONKAR, S. S.—*J. Indian M. Profession*, **2**: 879, 1955.

XXXIV ALL-INDIA MEDICAL CONFERENCE, BANGALORE, 1957

The thirtyfourth All-India Medical Conference will be held at Bangalore on 26-28 December, 1957. The Working Committee of the Indian Medical Association will meet on 22-23 December and the Central Council on 24-25 December, 1957. For further particulars, the Organising Secretary of the Conference, Dr. M. Sivaram, Medical Association Building, Fort, Bangalore 2, may be contacted.

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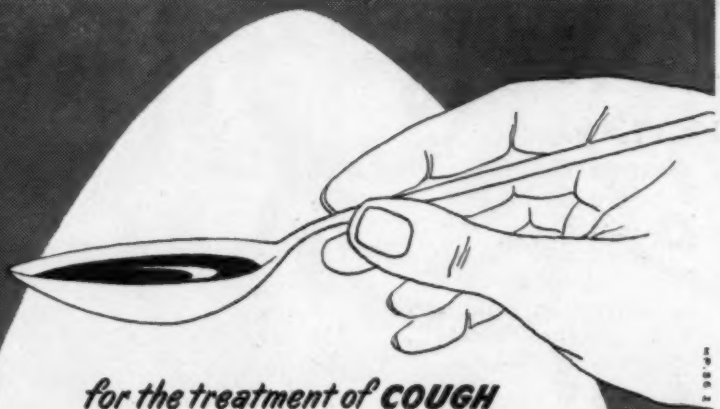

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SUPPLEMENT
Journal of the Indian Medical Association

VOL. 29, No. 4 CALCUTTA AUGUST 16, 1957

ASSOCIATION NOTES

I. M. A. WORKING COMMITTEE—*Proceedings of the 60th Meeting of the Working Committee of the I.M.A. held at Patna on 20th & 21st April, '57.*

(Subject to confirmation at the next meeting of the Working Committee).

The 60th Meeting of the Working Committee of the Indian Medical Association was held on 20th and 21st April, 1957 at the I.M.A. Bihar State Branch Office, with the President Dr. C. S. Thakar (Bombay) in the Chair.

MEMBERS PRESENT—(a) *Ex-Officio Members* : 1. Dr. C. S. Thakar (Bombay)—President. 2. Dr. A. C. Ukil (Calcutta)—Immediate Past-President. 3. Dr. R. A. Bhagwat (Indore)—Senior Vice-President. 4. Dr. R. C. Goulatia (Delhi)—Vice-President. 5. Dr. A. K. Bose (Calcutta)—Vice-President. 6. Dr. A. P. Mittra (New Delhi)—Hony. General Secretary. 7. Dr. Ved Prakash (New Delhi)—Hony. Joint Secretary. 8. Dr. P. C. Bhatla (Delhi)—Hony. Joint Secretary. 9. Dr. R. Sinha (Calcutta)—Hony. Secretary, Journal of the I.M.A.

(b) *Representatives from State/Territorial Branches* : 10. Dr. S. P. Nath, Assam State Branch; 11. Dr. N. K. Munshi, 12. Dr. J. Mojumdar, 13. Dr. Salil Dutt, 14. Dr. K. P. De, Bengal State Branch; 15. Dr. C. Suryanaryanamurthy, Andhra State Branch; 16. Dr. S. M. Ghosal, 17. Dr. Damodar Prasad, Bihar State Branch; 18. Dr. Amir Chand Narula, Delhi State Branch; 19. Dr. S. N. Mankad, 20. Dr. A. P. Shukla, Gujarat & Saurashtra Territorial Branch; 21. Dr. G. S. Melkote, Hyderabad State Branch; 22. Dr. M. M. Dalal, Kutch Territorial Branch; 23. Dr. B. K. Vinchure, Madhya Pradesh State Branch; 24. Dr. Y. P. Vasudevan, 25. Dr. C. Nathamuni Naidu, Madras State Branch; 26. Dr. B. K. Modak, 27. Dr. C. N. Chandrachud, Maharashtra & Karnatak Territorial Branch; 28. Dr. K. N. Misra, Orissa State Branch; 29. Dr. H. N. Shivapuri, U.P. State Branch.

(c) *Co-opted Members* : 30. Dr. Chamanlal M. Mehta (Bombay); 31. Dr. C. S. Patel (Delhi); 32. Dr. D. S. Mehra (Delhi); 33. Dr. K. K. Sen Gupta (Calcutta).

(d) *Invited Members* : 34. Dr. D. Ram, President, Bihar State Branch; 35. Dr. M. A. Hai, President, Patna Branch; 36. Dr. A. K. Sinha, Hony. Secretary, Patna Branch; 37. Dr. S. Samaddar (Patna); 38. Dr. T. N. Banerjee (Patna), Past President.

1. *Resolution of Condolence* :

The following Condolence Resolution was unanimously passed, all members standing and observing silence for one minute :—

"This meeting of the Working Committee of the Indian Medical Association places on record its deep sense of sorrow at the sad demise of the following members of the Association and conveys its heartfelt sympathy to the members of the bereaved families :—

1. Dr. D. V. G. Mathu (Ranchi); 2. Dr. Anand Krishna Pardhy (Bombay); 3. Dr. B. K. Mukherji (Allahabad); 4. Dr. J. L. Desai (Bombay); 5. Dr. D. H. Desai (Umreth Branch); 6. Dr. Dina Nath Chadda (Mhow Branch); 7. Dr. P. K. Roy Chowdhury (Baruipur Branch)."

The Working Committee expressed its sincere condolence to Dr. S. C. Sen, Past-President of the I.M.A. on the recent untimely death of his wife Mrs. Hannah Sen and to Dr. Damodar Prasad a member of the Working Committee, on the sad death of his mother on the previous night.

2. *Messages of inability to attend the meeting* :

Messages of inability to attend the meeting received from the following members were read :—

1. Dr. C. O. Karunakaran (Trivandrum); 2. Dr. P. K. Guha (Calcutta); 3. Dr. H. R. Dawar (Delhi); 4. Dr. M. M. S. Siddhu (Lucknow); 5. Dr. Y. D. Kapur (Faizabad); 6. Dr. M. S. Narayana Rao (Bangalore).

3. *Confirmation of the Proceedings of the last meeting of the Working Committee held at Trivandrum on the 22nd and 23rd December, 1956.*

The Minutes of the 59th meeting of the Working Committee held at Trivandrum on 22nd and 23rd December, 1956 (as circulated) were taken up for consideration.

Dr. A. C. Ukil (Calcutta) pointed out the omission in the minutes of the "Drugs and Therapeutic Trials Committee" which comprised of the following members :

1. Dr. A. C. Ukil, Chairman (Calcutta); 2. Dr. B. Mukherjee (Lucknow); 3. Dr. R. N. Chaudhuri (Calcutta); 4. Dr. C. G. Pandit (New Delhi); 5. Dr. C. O. Karunakaran (Trivandrum); 6. Dr. R. V. Sathe (Bombay); 7. Dr. B. B. Bhatia (Lucknow); 8. Dr. A. K. Bose (Calcutta); 9. Dr. M. L. Gujral (Lucknow); 10. Dr. K. K. Sen Gupta (Calcutta), Convener.

This being an omission was added as item 4 (15) to the Minutes.

CORRECTION :

On page 214, line 36, 1st column, the words "not excepted" were substituted by "not accepted".

The Proceedings of the 59th Meeting were then duly adopted as proposed by Dr. A. C. Ukil (Calcutta) and seconded by Dr. Chamanlal M. Mehta (Bombay).

4. *Business arising out of the Proceedings of the last meeting of the Working Committee.*

(1) *D.T.M. Course at Tropical School of Medicine, Calcutta* :

The Honorary General Secretary read out a letter dated 6th February, 1957 from the Mysore State Branch. Dr. A. C. Ukil informed the house that the control of D.T.M. had come under the University and that the Licentiate students would be issued a certificate of having attended the same course. This position had been accepted by the Association for the time being.

Dr. A. P. Mittra, the Hony. General Secretary read out his reply to the Mysore State Branch and informed that the Association would take up the matter again at a suitable time.

Dr. J. Mojumdar (Calcutta) argued in favour of pursuing the matter and approaching the Governing Body of the School of Tropical Medicine and also the Central Government and the West Bengal State Government to re-open the course under the faculty of Tropical Medicine.

The Working Committee decided by a majority of 19 votes in favour and none against, to re-open the issue and to pursue the matter with the newly formed West Bengal State Government.

Dr. A. K. Bose (Calcutta) proposed and Dr. R. C. Goulatia (Delhi) seconded and the following Sub-Committee was constituted at Calcutta to approach the authorities in the light of the above discussions :—

1. Dr. A. C. Ukil (Calcutta)—Convener; 2. Dr. J. Mojumdar (Calcutta) ; 3. Dr. A. K. Bose (Calcutta); 4. Dr. Salil Dutt (Calcutta); 5. Dr. N. K. Munshi (Calcutta).

Dr. A. K. Bose (Vice-President) would lead the delegation in the absence of Dr. A. C. Ukil

(2) *The Indian Medical Council Act as passed by the Lok Sabha and Rajya Sabha.*

The Honorary General Secretary read out the correspondence between Dr. D. V. Venkappa (Madras) and Dr. C. S. Thakar, President, I.M.A. Dr. Venkappa wanted the Association to pursue the matter again, as he thought the Health Ministry was prepared to consider the proposal of a Common Schedule. Dr. C. Nathamuni Naidu (Madras) State Branch supported Dr. Venkappa's suggestion and requested the Working Committee to get an amendment moved in the Lok Sabha. Dr. Y. P. Vasudevan, Dr. C. N. Chandrachud and Dr. C. S. Patel opposed it. Dr. R. A. Bhagwat, Dr. R. C. Goulatia, Dr. R. Sinha, Dr. C. Suryanarayanamurthy and Dr. J. Mojumdar supported Dr. Venkappa's views.

On the suggestion of Dr. J. Mojumdar, supported by Dr. A. C. Ukil, the following Committee was formed, to go into the matter :—

1. Dr. H. N. Shivapuri (Lucknow) ; 2. Dr. J. Mojumdar (Calcutta) ; 3. Dr. A. P. Shukla (Ahmedabad) ; 4. Dr. P. C. Bhatla (Delhi)—Convener.

It was also decided to ascertain the views of the State/territorial branches about the further line of action.

(3) *Planning Commission Prohibition Enquiry Committee Questionnaire.*

As the final report which was to have been rewritten had not been received from Dr. Sukomal Sen, this item was postponed.

(4) *Second Five Year Plan* :

Dr. A. K. Bose (Convener of the Committee) read out his report. There was a general discussion in which Dr. H. N. Shivapuri, Dr. Salil Dutt, Dr. C. Suryanarayanamurthy, Dr. K. N. Misra, Dr. J. Mojumdar, Dr. K. K. Sengupta, Dr. R. C. Goulatia, Dr. N. K. Munshi, Dr. P. C. Bhatla, Dr. Y. P. Vasudevan, Dr. S. P. Nath, Dr. A. C. Narula, Dr. R. Sinha, and Dr. A. P. Shukla took part.

The following resolution as proposed by Dr. A. K. Bose and seconded by Dr. Salil Dutt, was passed :—

"The Working Committee of the Indian Medical Association notes with surprise, contrary to its recommendations made in its comments on the Second Five Year Plan, the non-inclusion of Orissa, Assam and other States in the list of States where new medical colleges were to be established under the Second Five Year Plan.

The Working Committee, therefore, wishes to impress upon the Health Ministry, Government of India, once again, that the States of Orissa and Assam, being the States with lowest doctor-population ratio in India, should be given priority and provided with the two new medical colleges during the Second Five Year Plan period."

As suggested by most of the members, a questionnaire would be sent by the Second Five Year Plan Standing Committee to all the State/Territorial Branches to collect the necessary information about the unemployment and under-employment of the doctors in the country, before the Memorandum was drafted by the Standing Committee on the Subject.

(5) *Letter dated 28/10/55 of Dr. S. B. Anklesaria, Ahmedabad, along with a copy of the Practitioners' Benefit (Benevolent) Scheme.*

The draft scheme of Benevolent Fund as prepared by Dr. H. N. Shivapuri was discussed and it was decided to collect information from the branches about their existing local Benevolent Fund scheme, if any.

A Committee comprising of Dr. Shivapuri and Dr. Ved Prakash (Convener), was formed to go into the Scheme and after consultation with the legal experts to re-circulate the Scheme to all State/Territorial Branches.

(6) *Employees' State Insurance Schemes* :

The Honorary General Secretary informed the House that on the request of the President, Dr. Chamanlal M. Mehta (Bombay) had attended a meeting of the Corporation at Delhi (Report already circulated). Dr. S. C. Sen and Dr. A. P. Mittra had met Shri Vishnu Sahai, I.C.S., Secretary, Ministry of Labour and Chairman, of the Employees' State Insurance Corporation and it was felt that the Government did not accept the Association's recommendation of Rs. 20/- per family per year as capitation fee.

There was a general discussion in which Drs. Chamanlal Mehta, J. Mojumdar, N. K. Munshi, A. C. Narula, A. P. Mittra, R. Sinha, C. N. Naidu, G. S. Melkote and H. N. Shivpuri took part and it was decided to circulate to the branches the explanatory note of Dr. Chamanlal M. Mehta on the subject. It was also felt that the Association should not accept any lower remuneration and should impress upon the Government to negotiate with the Indian Medical Association only, as representing the medical profession in the country.

Dr. C. S. Thakar, President and the Working Committee appreciated the work done by Dr. Chamanlal M. Mehta in this connection.

The Working Committee took the following decision : :—

1. that negotiation with the Ministry of Labour be continued ;
2. a capitation fee of Rs. 20/- per family per year was considered to be fair and be demanded. However, if this figure was not acceptable to the authorities, the Association might consider accepting a fee of Rs. 18/- as the very minimum ;
3. if extra work was included in the Medical Benefits for the workers' families like visits, diagnostic facilities etc. a revision of charges be demanded ;
4. the number of family units per doctor be limited to 500 only (this decision was arrived at by 17 votes in favour and 7 against).

(7) Resolution of the Travancore-Cochin State Branch regarding formation of a Medical Practitioners Society to render help to the members of the Association in situations which arise in routine practice.

Postponed to the next meeting of the Working Committee.

(8) *Construction of the IMA Building and collection for Building Fund.*

The Hony. General Secretary informed the Working Committee about the Building Fund which stood at Rs. 51,639-57nP. as on 15th April, 1957 and that the lists of donors etc. were being published in the Journal.

It was decided to send a reminder every month to each State/Territorial Branch to stimulate collection of funds.

(9) Consideration of the draft rules of the Staff Provident Fund as corrected and modified by Shri R. K. Deb, Hony. Legal Adviser of the Association at Calcutta.

Dr. R. Sinha, Honorary Secretary, Journal of the IMA explained about the Government of India Provident Fund Rules which included press publications like our

Journal. The Journal of the IMA had to be a member of the Provident Fund Scheme controlled by the Government with Zonal Committees and as such the IMA had to provide Provident Fund at 6¼ per cent of the total salary (basic plus dearness allowance) to employees and 3¼ per cent to Government for administrative purposes (withdrawals by employees being done under special rules). Exemption could be claimed if majority of the workers prayed for it, when there would be a surcharge of 1 per cent payable to the Government. The Journal Committee had considered the matter and had applied for an exemption on the 13th of April 1957 as desired by the members of the staff unanimously, as they did not favour the Government rules.

It was decided to modify the draft rules of the Staff Provident Fund, in consultation with the Hony. Legal Adviser. The revised draft, to be circulated to the members of the Working Committee.

(10) *Consideration of grievances of medical officers employed by Indian Railway regarding their pay, status and prospect.*

There being nothing further to report, the matter was postponed.

(11) *Life Insurance Corporation* :

1. Two notes on the interviews in Bombay which the President and Dr. Chamanlal M. Mehta had with Mr. H. M. Patel, Chairman of the Corporation.

Letter No. DA/1 dated 19-3-57 of the Executive Director, Life Insurance Corporation of India, Bombay :—

The President, Dr. C. S. Thakar, informed the members about the interviews which he and Dr. Chamanlal M. Mehta had with the Chairman of the Life Insurance Corporation. It was disclosed by him that the Corporation was not prepared to appoint all doctors who were medical examiners prior to nationalisation of Life Insurance. He pointed out that at the second interview he said that the Chairman had agreed to re-appoint those doctors who had an income of at least Rs. 1,000 per year and not Rs. 2,500, as recorded by the Corporation at the interview.

There was a general discussion in which Drs. J. Mojumdar, R. C. Goulatia, H. N. Shivapuri, R. Sinha, N. K. Munshi, A. C. Narula, A. P. Shukla, Ved Prakash, C. Nathamuni Naidu, Salil Dutt, A. P. Mittra, A. K. Bose, B. K. Modak and A. C. Ukil took part. All members felt that there should be no fixed figure of previous income for selection of medical examiners and that all registered medical practitioners by right, be allowed to examine cases, that the maximum ceiling of cases to be examined by a doctor per month be fixed, but in rural areas and in sparsely populated urban areas, there should be no such limit; that negotiations should be carried on with the Corporation to get the doctors, who were doing insurance work, rehabilitated in insurance examination work. The President while summing up the discussion observed that there was better hope of success in the otherwise slower approach of negotiations, and because the Corporation was treating Rs. 2,000 to Rs. 3,000 risk cases as non-medical cases, as such, the medical examiners who were doing work for such amounts could not be accepted by the Corporation for re-appointment.

Dr. Salil Dutt (Calcutta) with Dr. C. Suryanarayanamurthy (Vijawada) proposed that "For a medical examiner to be appointed under the Life Insurance Corporation, having examined 10 cases (equivalent to about Rs. 100 as fees) per year should in urban areas be considered as substantial income for re-employment and in the case of rural areas, examining 3 cases be taken as limit per year for re-employment". This resolution was passed by 19 votes in favour and none against.

(11) 2. *Medical Service for the Employees of the Life Insurance Corporation.*

The Honorary General Secretary read out the Scheme on "fee for service" basis as formulated by Dr. Chamanlal M. Mehta regarding rendering medical service to the Insurance Corporation employees. A general discussion ensued in which Drs. R. C. Goulatia, R. Sinha, A. P. Mittra, A. C. Ukil, S. Dutt, C. Suryanarayanamurthy, H. N. Shivapuri, Chamanlal M. Mehta, S. M. Ghosal, Y. P. Vasudevan, C. Nathamuni Naidu, C. S. Melkote and A. C. Narula took part. The following proposal of Dr. Salil Dutt seconded by Dr. S. M. Ghosal was put to vote and lost by 12 against and 11 in favour.

"As the 'Fee for Service' system under consideration for the Life Insurance Corporation requires quite a new approach to the subject, and many details are involved in the scale of fees and the system of working, the matter requires to have the fullest consideration of the branches and as such, it be resolved that the matter be circulated to the Local and State/Territorial Branches and taken up for discussion in the August meeting of the Working Committee."

Dr. R. Sinha (Calcutta) proposed and Dr. R. A. Bhagwat (Indore) seconded the following resolution, which was carried 18 in favour and none against.

"(1) Resolved that the Indian Medical Association cooperates with the Life Insurance Corporation in evolving a scheme for providing medical service to the employees of the Corporation and that negotiations be continued with the Corporation in the matter,

(2) that for the time being the IMA favours a 'fee for service' system for such medical service,

(3) that the fee-scales and other details should be decided later in consultation with the State and Territorial Branches".

Arising out of the discussions, the formation of an "Economic Committee of the IMA", as suggested by Dr. G. S. Melkote (Hyderabad) was not agreed upon. Dr. Chamanlal M. Mehta was requested by the Working Committee to draft a questionnaire which was to be circulated to the branches for opinion, to collect data regarding all medical service schemes, as existing in the country.

(12) Letter No. 1452(P)/55-56 dated 21-7-56 of Dr. N. K. Munshi, Calcutta, regarding resolutions passed at the All-India Medical Conference and State Conferences. Are these obligatory morally or constitutionally on the IMA or its branches?

Dr. Ved Prakash, Honorary Joint Secretary, informed the house that the Report of the Sub-Committee was still not ready as the information required had to be collected from all branches and the Rules and Bye-laws of all branches had to be gone through, to study contradictory rules, if any existing in different states. The items was postponed till the next meeting.

The members of the old Sub-Committee, viz. Dr. A. C. Ukil, Dr. A. P. Mittra, Dr. C. O. Karunakaran and Dr. H. N. Shivapuri, were re-appointed to go into the matter.

(13) Letter dated 1-12-56 of Dr. D. G. Ojha of Jodhpur regarding presentation of certain trophies to the IMA.

The Honorary General Secretary said that replies from only 5 State/Territorial Branches, viz. Andhra, Delhi, Bombay, Mysore and Uttar Pradesh had so far been received in response to the Central Office circular on this matter.

The consideration of this item was postponed to the next meeting of the Working Committee and in the meantime, information would be collected from the remaining State/Territorial Branches.

(14) *Disposal of funds of the South Indian Branch of the B.M.A. (Dissolved in 1951).*

Dr. A. P. Mittra, the Honorary General Secretary informed the house that in accordance with the Committee's decision on this matter taken at its meeting held at Trivandrum on 22nd and 23rd December, 1956, the state branches concerned had been written to. In response the Travancore and Cochin State Branch and the Mysore State Branch had agreed to transfer their shares of the

said fund to the I.M.A. Building Fund, as requested by the Working Committee. The Andhra State Branch has not yet replied, whereas, the Madras State Branch wanted to know what would be its exact share after apportionment. The Madras State Branch had further decided, first to get possession of its due share and then to decide whether it would donate a part or the whole of the amount for the I.M.A. Building Fund. Dr. Y. P. Vasudevan (Madras) said that the Madras State Branch would most probably donate its whole share to the Building Fund but would not take a final decision till it had actually received the amount which was to be apportional, as its legitimate due. The Honorary General Secretary further clarified the position by saying that it would be very difficult at this stage to apportion the proper shares to the four state branches. The Working Committee could however, take a decision in this matter and give its award. He further felt that it would be so much better and easier if all these four branches jointly agreed to donate the whole amount to the Building Fund and in that case, the matter of the transfer of the amount to the I.M.A. Building Fund account, in agreement with the B.M.A. Head Office, could be directly settled without further delay. The Working Committee decided that further negotiations with the Madras State Branch and the Andhra State Branch be continued.

(15) Letter dated 5th December, 1956 from Dr. Anantaram, Hony. Secretary, Guntur Branch, I.M.A. regarding contribution of Re. 1 per member per year for the Reception Committee of the All-India Medical Conference every year.

The letter from Dr. Anantaram, Hony. Secretary, Guntur Branch I.M.A. and Dr. K. P. De regarding contribution of Re. 1 per member per year for the Reception Committee of the All-India Medical Conferences was read out.

After considering the matter, the Working Committee did not approve of the suggestion of Dr. Anantaram and Dr. K. P. De and the matter was dropped.

(16) Letter No. F.1/200/56-H II dated 19-2-58 from the Deputy Secretary, Government of India, Ministry of Health, *re* the recommendations made by the Family Planning Board with regard to selected family planing centres :

Dr. Ved Prakash, the Honorary Joint Secretary informed the house about the latest position regarding the opening of family planning centres, with the co-operation of the I.M.A. as proposed by the Secretary of the Family Planning Board to Dr. S. C. Sen and himself lately at a meeting held at the I.M.A. Office.

As the Government's scheme was not yet finalised and was still in the exploratory stage, the Working Committee decided to defer the matter for the present.

(17) *Appointment of Standing Committees of the I.M.A.*

The Working Committee appointed the following Standing Committees of the I.M.A.

1. *Second Five Year Plan* :—1. Dr. A. C. Ukil (Calcutta); 2. Dr. A. P. Mittra (New Delhi); 3. Dr. S. C. Sen (New Delhi); 4. Dr. H. N. Shivapuri (Lucknow); 5. Dr. A. K. Sen (Patna); 6. Dr. S. Roy Choudhury (Calcutta); 7. Dr. A. K. Bose(Calcutta) —Convener, with powers to coopt.
2. *Medical Education & Research* :—1. Dr. S. N. Ghosal (Patna); 2. Dr. C. O. Karunakaran (Trivandrum); 3. Dr. G. S. Melkote (Hyderabad); 4. Dr. K. K. Sen Gupta (Calcutta); 5. Dr. P. K. Guha (Calcutta); 6. Dr. P. B. Mukherjee (Calcutta); 7. Dr. A. K. Bose (Calcutta)—Convener with powers to coopt.
3. *Drugs & Therapeutic Trials* :—1. Dr. A. C. Ukil (Calcutta); 2. Dr. B. Mukherjee (Lucknow); 3. Dr. R. N. Choudhury (Calcutta); 4. Dr. C. G. Pandit (New Delhi); 5. Dr. C. O. Karunakaran (Trivandrum); 6. Dr. R. V. Sathe (Bombay); 7. Dr. B. B. Bhatia (Lucknow); 8. Dr. A. K. Bose (Calcutta); 9. Dr. M. L. Gujral (Lucknow); 10. Dr. K. K. Sen Gupta (Calcutta)—Convener with powers to coopt.
4. *Employees' State Insurance Corporation* :—1. Dr. C. S. Thakar (Bombay)—President; 2. Dr. Chamanlal M. Mehta (Bombay); 3. Dr. J. Mojumdar (Calcutta); 4. Dr. H. N. Shivapuri (Lucknow); 5. Dr. A. P. Shukla (Ahmedabad); 6. Dr. M. A. Panwala (Bombay)—Hony. Asstt. Secretary; 7. Dr. D. S. Mehra (Delhi)—Hony. Asstt. Secretary—Convener.

   Dr. G. S. Melkote was to be invited to attend the meetings of this Committee whenever it was convenient to him and his advice was necessary.
5. *Life Insurance Corporation* :—1. Dr. C. S. Thakar (Bombay)—President; 2. Dr. R. C. Goulatia (Delhi); 3. Dr. Chamanlal M. Mehta (Bombay); 4. Dr. R. V. Sathe (Bombay); 5. Dr. Ved Prakash (Delhi)—Hony. Joint Secretary—Convener.
6. *I.M.A. Building* :—1. Dr. C. S. Thakar (Bombay) —President; 2. Dr. S. C. Sen (Delhi); 3. Dr. A. C. Ukil (Calcutta); 4. Dr. R. C. Goulatia (Delhi); 5. Dr. A. P. Mittra (Delhi); 6. Dr. C. S. Melkote (Hyderabad); 7. & 8. Two nominees of the Delhi Medical Association; 9. Dr. P. C. Bhatla (Delhi)—Hony. Joint Secretary—Convener.

Advisers :—1. *Hony. Architect*—Mr. N. K. Kothari of Messrs. Master Sathe & Kothari Architects. 2. *Hony. Consulting Engineer* :—Mr. J. N. Das Gupta (Delhi), Retd. Chief Executive Engineer, Municipal Committee.

On the proposal of Dr. Chamanlal M. Mehta, the Working Committee decided to request Dr. S. C. Sen (Delhi) to undertake tours for collection of funds for the I.M.A. Building and decided to allow him air travel expenses, wherever he so desired.

Dr. G. S. Melkote (Hyderabad) volunteered to help the Association in the collection of Building Fund, during his tour of the country.

(18) *Condensed M.B.B.S. Course for Licentiates.*

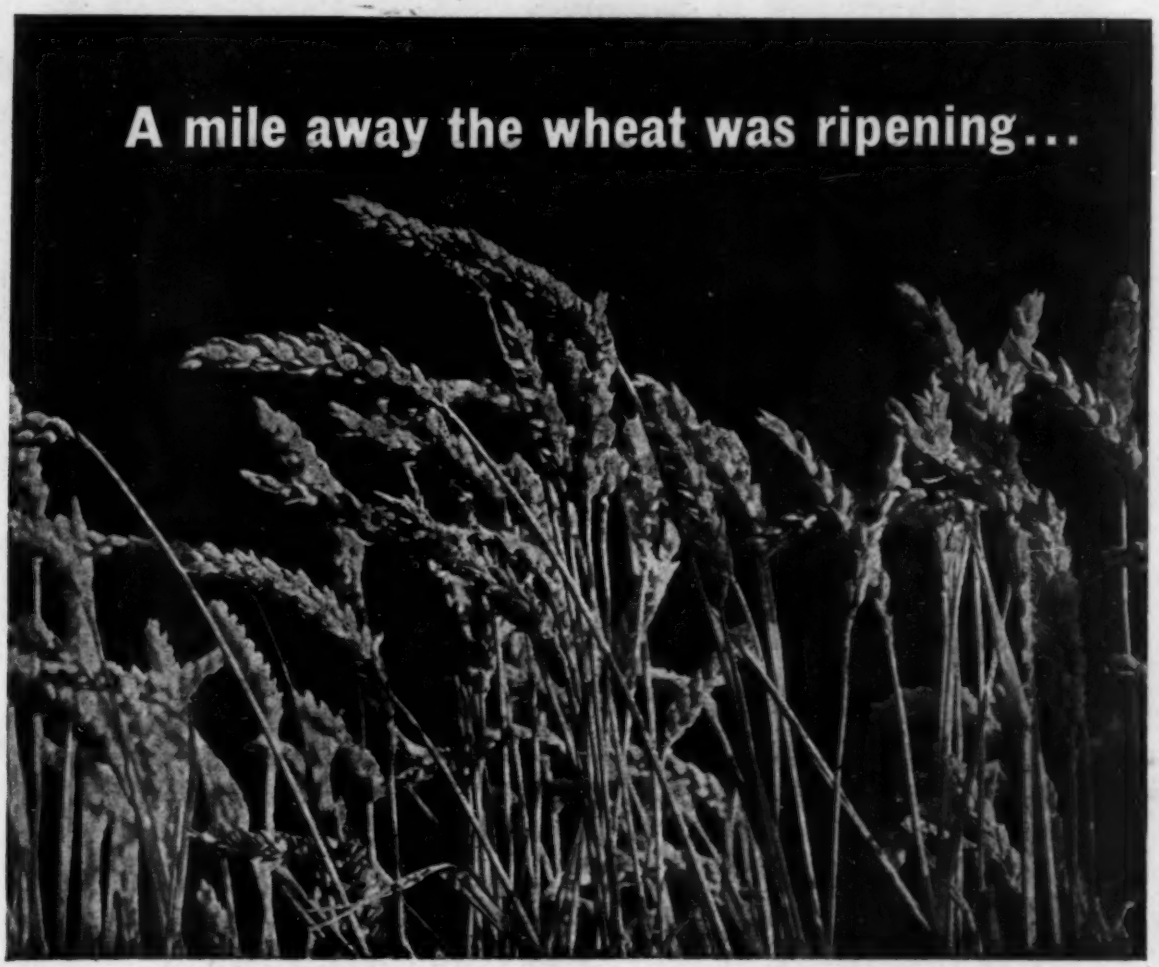
The President informed the members about the meeting of the I.M.A. representatives, viz. Dr. C. S. Thakar, President (Bombay), Dr. Ved Prakash (Delhi), Hony. Joint Secretary and Dr. J. Mojumdar (Calcutta) with the Executive Committee of the Medical Council of India. He said that the Medical Council of India had agreed to consider the matter favourably, provided the colleges agreed again to start consensed M.B.B.S. courses.

The Working Committee decided to collect all information about the colleges and Universities conducting condensed courses, also to enquire from the Medical Council of India about their requirements for recognition of condensed courses in the colleges. Then the State Governments and/or the Ministry of Health, Government of India were to be approached for subsidies for the conduction of these courses at various centres.

5. (a) *Formation of new local branches* :

The Working Committee approved the formation of the following local branches :—

Name of Local Branch	State/terri. Branch	No. of members	Date of formation
1. Coorg ...	Mysore	10	1-10-1956
2. Titagarh ...	Bengal	7	1- 4-1957
3. Bud Bud ...	—do—	8	1-10-1956
4. New Barrackpore-(Madhyamgram) ...	—do—	10	—do—
5. Kalna (Dist. Burdwan)	—do—	9	—do—
6. Mathabhanga ...	—do—	10	1- 4-1957
7. Khondaghosh (Dt. Burdwan) ...	—do—	5	—do—
8. Panihati ...	—do—	12	—do—
9. Sindri ...	Bihar	11	—do—
10. Srikakulam ...	Andhra	7	—do—



To the doctor came a new patient. Mrs. N., aged 22, 32 weeks pregnant.

She complained of fatigue and anorexia. Her blood pressure, pulse rate and temperature were normal. What was her haemoglobin level? Only 55%.

How could it be raised to normal in two months? The doctor knew a way.

He checked her weight. It was 110 lb. He calculated the dose as 30 ml. to correct Hb and replenish body iron stores, to which was added a further 10 ml. to meet the demands of the fœtus and increased blood volume.[1] He ordered a 5 ml. injection straight away.

When Mrs. N. came a week later for the last injection, her morale had considerably improved. The doctor was not surprised. Furthermore she would be very close to 100% Hb in another six weeks.

Meanwhile he was assured that iron deficiency would not recur. The injections had provided ample iron for fœtal demands. Iron would be ready for haemoglobin synthesis after labour.

The harvest was in

Labour started 2 weeks early. Twin boys were born. Blood loss 16 oz. But Mrs. N. soon recovered—her iron stores were full.

The doctor had prescribed

Imferon

Trade Mark *Iron Dextran Complex*

INTRAMUSCULAR IRON

[1]*Jennison, R. F. & Ellis, H. R. (1954) Lancet, 2, 1245*

A product from the Benger Research Laboratories, Holmes Chapel, England. Imferon is the first and only satisfactory intramuscular iron. Further information on Imferon, with references to recent literature on "body iron stores" and the "mucosal block" may be had from:

MARTIN & HARRIS (PRIVATE) LTD, MADRAS, CALCUTTA, NEW DELHI, BOMBAY

BENGER

OPIL

SYRUP WORMOPIL

Containing

500 mg. of Piperazine hydrate per fluid drachm

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Effective and Non-toxic Treatment
IN THREAD WORM.

Supplied in bottles of 2 oz., 4 oz. and 16 oz.

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ANTISACER COMPOSITUM WANDER

FOR TREATMENT OF EPILEPSY IN CHILDREN & ADULTS IN TWO DIFFERENT STRENGTHS CONTAINING :

Diphenylhydantoin sodium
Phenobarbitone
Potassium bromide
Caffeine citrate
Atropine sulphate

Packings : Tubes of 20 and Bottles of 100

Dr. A. WANDER S. A., BERNE – Switzerland.

Sole Importers:

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PHARMACEUTICAL DEPARTMENT

Indian Globe Chambers, Fort Street, BOMBAY-1.

Branches at : Patna, Delhi, Kanpur, Madras, Madurai, Secunderabad (Dn.) and Bangalore City.

(b) *Revival of branches:*

Revival of the following local branches was duly approved by the Working Committee.

Name of Local Branch		State/terri. Branch	No. of members	Date of Revival
1. Nanital	...	U. P.	5	1-10-1956
2. Etawah	...	—do—	5	—do—
3. Hardwar	...	—do—	16	1- 4-1957
4. Ramnad	...	Madras	37	1-10-1956

(c) *Suspension of Branches.*

Nil.

(d) *Branches declared defunct.*

The following Local Branch was declared "Defunct" as recommended by the State/Territorial Branch concerned :—

1. Choharpur ... U. P. With effect from 1-4-1957

6. *Consideration of C.F.C. arrears, if any.*

In the absence of the Honorary Treasurer, Dr. P. C. Bhatla, Hony. Joint Secretary, read out the details of the arrears of C.F.C. for the last four years. The President and the Honorary General Secretary appealed to all members of the Working Committee to impress upon their respective branches the urgency of sending the C.F.C. in time to the Central Office for the efficient working of the Association.

7. *Adoption of Audited Accounts.*

(a) Dr. P. C. Bhatla, Hony. Joint Secretary, presented the accounts of the Central Office from 1-10-1956 to 31-12-1956, and the same were duly adopted as proposed by Dr. H. N. Shivapuri (Lucknow) and seconded by Dr. B. K. Modak (Kalyan).

The letter of Dr. P. K. Guha, Editor, Journal of the I.M.A., Calcutta, regarding the allowances for light tiffin to the staff of the Central Office was postponed till the budget for the next year was framed.

(b) The accounts of the Journal Department from 1-10-1956 to 31-12-1956 were presented by Dr. R. Sinha, the Honorary Secretary, Journal Department. The same were duly adopted as proposed by Dr. A. P. Shukla (Ahmedabad) and seconded by Dr. H. N. Shivapuri (Lucknow).

8. *Letter No. F. 24-37/56-MI dated 17-10-56 of the Ministry of Health, Government of India, re: XI International Congress of Dermatology to be held at Stockholm from 31st July to 6th August, 1957. (Nominations invited from branches by circular).*

The Honorary General Secretary informed the House that only two nominations those of Dr. P. N. Bohl (Delhi) and Dr. K. N. Saxena (Agra) had been received from the branches and these had been forwarded to the Ministry of Health. The information was noted.

9. *Training Course on Mutual Benefit Societies held at Copenhagen in 1956 under the auspices of the International Labour Organisation.*

The Honorary General Secretary informed the house that Dr. M. A. Panwala (Bombay) who was deputed as the representative of the I.M.A. was included in the Government Deputation to Copenhagen to attend the training course on mutual Benefit Societies. Dr. Panwala's report was put on record and the Working Committee appreciated the work done by him. It was decided to refer the matter to the E.S.I.C. Standing Committee along with the report of the Dy. Secretary, Ministry of Health, Govt. of India, on the subject.

10. *Letter No. AM/AS/PS dated 8-2-57 of the Honorary Secretary, British Commonwealth Medical Conference with an attached note, informing that the proposed Commonwealth Conference was being postponed till the next year.*

The information was noted.

11. *Report of I.M.A. representatives who attended the special Conference on the Drugs Rules 1955—Amendment of—held on 24th January, 1957 at Delhi under the auspices of the Union Health Ministry.*

The Conference was held in the Health Ministry to discuss the proposed Drugs (Amendment) Act. The President had nominated Dr. K. K. Sengupta (Calcutta), Dr. R. C. Goulatia (Delhi), Vice-President, and Dr. P. C. Bhatla (Delhi), Hony. Joint Secretary, as representatives of the I.M.A. Their joint report as circulated was adopted. The President then observed that the points of view put forward on behalf of the Association had been generally accepted by the authorities. The work done by the representatives was appreciated.

Drs. K. K. Sengupta and P. C. Bhatla explained in detail the various questions raised by the members. On a reply to Dr. J. Mojumdar, information was given that only medical graduates could be eligible for inclusion in the "qualified personnel", competent to supervise and direct the manufacture of drugs and pharmaceuticals (vide rule 71 and 76 of the Drugs Act) and that Licentiates could not be included.

The Working Committee authorised the President to decide about the T.A. to be paid to the members when summoned for similar special meetings.

12. *Letter dated 11-2-57 of Dr. T. S. Balasubramanian, Trichirapalli, on policy of the Government re: promotion of Ayurveda and research in it and founding of Ayurvedic Colleges.*

A letter from Dr. T. S. Balasubramanian (Trichy) was discussed and Dr. A. P. Mittra, Dr. R. C. Goulatia, Dr. A. K. Bose, Dr. Chamanlal M. Mehta, Dr. H. N. Shivapuri, Dr. S. M. Ghosal, Dr. A. C. Ukil, Dr. K. K. Sengupta and Dr. G. S. Melkote took part in the discussion. The Working Committee decided to refer the letter etc. to the Second Five Year Plan Standing Committee and the Medical Education Research Standing Committee for opinion along with a copy of the Journal of the I.M.A. in which an article on the subject, had been published.

13. *Re-organisation of State/Territorial Branches of the I.M.A.*

Dr. A. P. Mittra, the Honorary General Secretary informed the house re: the previous decision of the Working Committee and that of the Central Council at its annual meeting at Trivandrum when the resolution of Dr. H. N. Shivapuri was referred to the Working Committee for disposal. A circular had been sent by the Central office and the replies received from the State/Territorial Branches were read out, regarding their having been or not having been affected by the re-organisation of Indian States. The following resolution by Dr. H. N. Shivapuri was taken into consideration.

"All Local Branches in a State in India as formed with effect from November 1, 1956 shall form a group to constitute a State Branch. Similarly, all Local Branches in a Union Territory as formed with effect from November 1, 1956 shall form a group to constitute a territorial Branch. In smaller Union Territories, even a single Branch may be recognised as a Territorial Branch by the Central Council.

Further, this reorganisation shall be effective with effect from October 1, 1957."

A letter from Bombay State Co-ordination Committee of the I.M.A. was read out. There was a general discussion and Dr. B. K. Vinchure while opposing Dr. Shivapuri's resolution, was of the opinion that a new Territorial Branch should be formed for the Nagpur Division with headquarters at Nagpur, as it was no longer in Madhya Pradesh. He urged the necessity of this step as inclusion of this area either under the Bombay Territorial Branch or the Mahrashtra and Karnatak Branch would disintegrate the activities of the Association in this area due to lack of proper communications and because of the peculiar local problems.

Dr. M. M. Dalal (Kutch) objected to the decision of the Bombay State co-ordinating Committee in including the area of Kutch in the orbit of the Bombay Territorial Branch without consulting the Kutch territorial Branch.

Dr. C. Suryanarayanamurthy (Andhra) and Dr. C. S. Melkote (Hyderabad) both were of the opinion that in the fitness of things, the local branches under the jurisdiction of the Hyderabad State Branch, should now, according to their position after the reorganisation of States, join the respective and proper State Branches. They also observed that since Hyderabad State as such was no longer extant, the Hyderabad State Branch would in due course dissolve itself.

Dr. Chamanlal M. Mehta (Bombay), Dr. C. N. Chandrachud (M & K), Dr. B. K. Modak (M & K), Dr. A. P. Shukla (G & S), Dr. G. S. Melkote (Hyderabad) and Dr. R. A. Bhagwat (Indore), supported the Bombay State co-ordination Committee's recommendation for having three Territorial Branches in that State, in conformity to the wishes of the members of that area.

Dr. A. C. Ukil (Calcutta), Dr. J. Mojumdar (Calcutta), Dr. S. C. Goulatia (Delhi), Dr. A. K. Bose (Calcutta) and Dr. R. Sinha (Calcutta) supporting Dr. Shivapuri's resolution, were of the opinion that the reorganisation of State Branches should conform to the political division of the country in view of the implementation of the Second Five Year Plan and other administrative conveniences etc.

Arising out of the discussions, Dr. R. Sinha (Calcutta) observed that the Working Committee was not competent to decide the issue and that the matter should be considered by the Central Council.

Dr. A. P. Mittra, the Honorary General Secretary said that it must be realised that if a local branch (or a group of branches) fell into a new State it must also go under the proper State Branch since the previous State Branch could no longer deal with its peculiar problems which would have to be taken up with the authorities of a different State. The Hyderabad State Branch had wisely decided, he said, to wind up and allow its local branches to join the State Branches of their respective areas, thus a big problem would be automatically solved. He strongly disfavoured the idea of several Territorial Branches in any one State even if it was a large State. He thought that a realistic attitude must be taken and as a principle and in conformity with the reorganisation of States there should be only one State Branch for each State.

The following amendments to Dr. Shivapuri's resolution were moved.—

1. Proposed by Dr. A. P. Shukla (Ahmedabad) and Seconded by Dr. S. N. Mankad (G & S).

To add the words "except Bombay, Mahrashtra (including Marathvada and Vidharbha), Gujrat & Saurashtra (including Kutch)" after the first sentence.

2. Proposed by Dr. J. Mojumdar (Calcutta) and Seconded by Dr. Salil Dutt (Calcutta).

To add the following in Dr. Shivapuri's resolution in place of the second sentence :—

> "that the Union Territories of Himachal Pradesh, Tripura and Manipur will amalgamate into any contiguous State Branch in place of these territories having separate Territorial Branches."

The amendments were accepted by Dr. Shivapuri and the amended resolution was passed by majority votes with 1 against, to substitute Rule No. 6 of the I.M.A., as under :—

"All Local Branches in a State in India as formed with effect from November 1, 1956, shall form a group to constitute a State Branch except in Bombay, Maharashtra (including Marathawada and Vidharbha), Gujrat and Saurashtra (including Kutch) and Delhi which shall respectively form a group to constitute a Territorial Branch. The Union territories of Himachal Pradesh, Tripura and Manipur will amalgamate into any contiguous State Branch.

Further, this recommendation shall be effective with effect from April 1, 1958 except where it can be arranged earlier."

The Working Committee adopted the above resolution which involved a change of Rule, on the strength of the directive given by the Central Council at its 17th Annual Meeting held at Trivandrum on 24th and 25th December, 1956. The relevant extract from the proceedings of the said meeting of the Central Council ran as follows :— "Item No. 11 (1) The resolution of Dr. H. N. Shivapuri was taken up for consideration. Since this was not received in the Central Office four months before the meeting, according to Rule No. 44 of the I.M.A., the Central Council referred it to the next meeting of the Working Committee for disposal."

14. *Letter No. 12-12/57/D dated 19-2-57 from the National Formulary Committee, Directorate General of Health Services re: compilation of National Formulary of India, with questionnaire and list of Drugs. (Circulated to State/Territorial Branches).*

The Honorary General Secretary said that only one reply viz. from the Delhi State Branch had been received to the Questionnaire regarding the proposed National Formulary.

It was felt by the Working Committee that the time given for the consideration of the matter was too short and as such, the recommendations of the I.M.A. could not be forwarded in time as required by the Government of India. It was decided to send a reply to the Director General of Health Services, conveying this opinion.

15. *Letter No. PI/153/57 dated 19-2-57 of the Regional Director, World Health Organisation re: Observance of World Health Day on 7th April, 1957.*

The information given by the Honorary General Secretary was noted and in due course, the reply would be forwarded to the W.H.O. when the necessary particulars were received from the State Branches regarding the observance of World Health Day on 7th April, 1957.

16. *The 11th General Assembly of the World Medical Association to be held in Istanbul, Turkey, September 29 to October 5, 1957—Selection of two Delegates, 2 Alternate Delegates and two observers from the I.M.A.*

The Honorary General Secretary informed the house that the following names had been received in the Central Office :—

1. Dr. S. C. Sen (Delhi)	Nominated by State Branches as Delegates, Alternates and Observers.
2. Dr. A. P. Mittra (Delhi)	
3. Dr. B. V. Mulay (Sholapur)	
4. Dr. S. P. Nath (Silchar)	
5. Dr. M. G. Nair (Coimbatore)	
6. Dr. H. N. Shivapuri (Lucknow)	
7. Dr. B. L. Rohtagi (Kanpur)	
8. Dr. (Miss) S. Chaudhuri (Delhi)	
9. Dr. H. N. Dewan (Delhi)	

The Working Committee selected the following members to represent the I.M.A. on the 11th General Assembly of the W.M.A.

Delegates : 1. Dr. S. C. Sen (Delhi).
2. Dr. A. P. Mittra (Delhi).
(If Dr. Mittra be unable to attend the general Assembly of the W.M.A. then Dr. H. N. Shivapuri will go in his place as a Delegate of the I.M.A.).

Alternate Delegates : 1. Dr. B. L. Rohtagi (Kanpur).
2. Dr. H. N. Dewan (Delhi).

Observers : 1. Dr. M. G. Nair (Coimbatore).
2. Dr. (Miss) S. Chaudhuri (Delhi).

Dr. S. C. Sen, a member of the Council of the W.M.A. and Secretary for Asia, was appointed the leader of the Delegation. Dr. A. P. Mittra, the Honorary General Secretary of the I.M.A. was appointed the second Delegate and his travelling and per diem expenses would be

paid from the Association Funds, as provided for in the Budget. In case Dr. Mittra be unable to go to the W.M.A. Assembly, Dr. H. N. Shivapuri would go as his substitute. The Alternate Delegates and the Observers would bear their own expenses.

17. *Annual Meeting of the B.M.A.—Selection of one Delegate from the I.M.A.*

The Honorary General Secretary informed that the names of the following members had been received in the Central Office for selection of one Delegate of the I.M.A. for the 125th Annual Meeting of the B.M.A. to be held in Newcastle upon Tyne from July 15th to 19th, 1957.

1. Dr. (Miss) S. Chaudhuri (Delhi).
2. Dr. P. N. Behl (Delhi).
3. Dr. H. N. Dewan (Delhi).
4. Dr. N. Vaidyanathan (Madras).
5. Dr. S. C. Sen (Delhi).

The Working Committee appointed Dr. N. Vaidyanathan (Madras) as the official Delegate of the I.M.A. If Dr. Vaidyanathan be unable to go, Dr. S. C. Sen would be the official Delegate of the I.M.A. instead.

The Working Committee decided to invite one member of the B.M.A. to attend the All-India Medical Conference and that it would be responsible for arrangements only for hospitality to him during the Conference and not any T.A.

The Working Committee decided that all representatives of the I.M.A. to conferences or meetings abroad, should submit their reports to the Central Office within a month or so of their returning home.

18. *Consideration of letters of Dr. M. M. S. Siddhu, Dr. Y. D. Kapur and Dr. H. N. Shivavpuri re: the amendment of Rule 32 (representatives of the Central Council) passed by the Central Council.*

The letters of Dr. M. M. S. Siddhu, Dr. Y. D. Kapur and Dr. H. N. Shivapuri were taken into consideration.

It had been pointed out by Dr. H. N. Shivapuri, Dr. Y. D. Kapur and Dr. M. M. S. Siddhu that the minutes of the Annual Meeting of the Central Council held at Trivandrum on 24th and 25th December, 1956 were not correctly recorded, in so far as the last but one para of Item No. 4 of Part II "Report of the Inspection of the Central Office of the I.M.A." was concerned. Drs. Y. D. Kapur and M. M. S. Siddhu, the proposer and seconder of the amendment respectively regarding the branch representation on the Central Council claimed that the following was accepted by the Central Council.

10—100 members—One representative. Thereafter, for every 100 or part thereof
—One representative.

Furthermore, every branch should contribute Rs. 10/- towards T.A. to the Central Council.

Whereas, the minutes of the meeting were as under :—

10—100 member—One representative and one additional representative for each completed unit of 100 members thereafter (as proposed by Dr. Y. D. Kapur and seconded by Dr. R. N. Gupta).

Dr. Ved Prakash, the Honorary Joint Secretary showed from the stenographer's record of the Central meeting that the notes taken by the stenographers were wrong. The correct notes taken by himself showed the decision of the Central Council, as under :—

10—100 members—One representative. Thereafter, for every 100 or part thereof
—One representative.

Furthermore, every branch should contribute Rs. 10/- per representative towards T.A. to the Central Council.

In view of the fact that the first part of the amendment dealing with the representation on the Central Council, there was agreement between the contention of Drs. Y. D. Kapur and M. M. S. Siddhu and the correctly recorded notes of the Honorary Joint Secretary, the Working Committee noted the mistake in this part of the amendment. Regarding contribution of Rs. 10/- per representative/per branch, this had been omitted altogether in the minutes.

Dr. Y. D. Kapur maintained that the Central Council had accepted a contribution of Rs. 10/- per branch towards T.A. to the Central Council. Whereas, the notes taken by Dr. Ved Prakash showed that Rs. 10/- was to be contributed per representative. The Working Committee noted this omission. Dr. A. P. Mittra said that though both a mistake and an omission in writing the proceedings of the Annual Meeting of the Central Council had genuinely occurred, no action could be taken by the Secretaries in making the correction at this stage since the minutes had been duly confirmed at the subsequent Ordinary Meeting of the Central Council after scrutinizing them page by page and line by line. A discussion followed in which the following members took part. Dr. H. N. Shivapuri (Lucknow), Dr. S. M. Ghosal (Patna), Dr. R. C. Goulatia (Delhi), Dr. B. K. Vinchure (Nagpur), Dr. A. P. Mittra (Delhi), Dr. A. C. Narula (Delhi), Dr. Chamanlal M. Mehta (Bombay), Dr. Ved Prakash (Delhi) and Dr. P. C. Bhatia (Delhi). At the end of the discussion, the president ruled as follows :—

"The Working Committee had no powers to make any change in the minutes of the Central Council which had been confirmed. Under the circumstances, the office would circularise about the mistake to all the members who attended the Annual Meeting of the Central Council at Trivandrum on 24th and 25th December, 1956 and obtain their impressions in the matter and place them before the next meeting of the Working Committee for final decision."

19. *Letter dated 28-1-57 of the President, Association of Medical Women in India re: Lady Hardinge Medical College, New Delhi.*

The letter from the President, Association of Medical Women in India was taken into consideration.

Dr. R. C. Goulatia (Delhi) apprised the house of the discussions which the Ministry of Health, Government of India had with the Delhi Medical Association representatives regarding Lady Hardinge Medical College and the resolution passed by the Delhi Medical Association in the matter.

The Working Committee decided that as the Government had already taken action in the matter finally, the subject could not be taken into consideration.

20. *World Medical Association matters* :
—National Correspondents for World Medical Journal.

On the proposal of Dr. Chamanlal M. Mehta, seconded by Dr. R. C. Goulatia, the Working Committee appointed the following as National Correspondents for the World Medical Journal :

(1) The Honorary General Secretary, I.M.A. for Medico-Socio-Political Matters in consultation with the other office bearers at the Central Office.
(2) The Honorary Editor of the Journal of the I.M.A. for Scientific Matters. Details of matters reported to be approved by the Journal Committee.

21. *Resolution of Dr. H. N. Shivapuri re: substitution of Hindi for English as the official language of the Association.*

The resolution of Dr. H. N. Shivapuri proposing substitution of Hindi for English, as the official language of the Association, was taken into consideration.

Dr. Ved Prakash (Delhi), Dr. P. C. Bhatia (Delhi) and Dr. R. C. Goulatia (Delhi) opposed the resolution and requested Dr. Shivapuri to withdraw it, as the time was not opportunate for the proposed change.

Dr. Shivapuri did not agree to withdraw, so the resolution was put to vote and was rejected by the house by a majority of votes.

22. *Letter No. CH-11/8/(14) 57/3075 dated 18-3-57 of the Ministry of Heavy Industries, Development Wing, New Delhi, re: Manufacture of essential drugs.*

The Working Committee appointed the following sub-Committee to look into the matter regarding the manufacture of essential drugs etc.

1. Dr. H. N. Shivapuri (Lucknow).
2. Dr. C. Suryanarayanamurthy (Andhra).
3. Dr. A. P. Mittra (Delhi)—Convener.

23. *Letter dated 12-3-57 of the past President, Society for the Study of Industrial Medicine (India) reg. holding Annual Conferences of different special Associations of doctors at the same time and at the venue of the Annual All-India Medical Conference.*

The letter was read out by the Honorary General Secretary.

The Working Committee welcomed the suggestion and decided to refer the letter to the Reception Committee of the next All-India Medical Conference to be held at Bangalore in December 1957.

24. *Consideration of the policy of the Government of India re: control of imports of infant and invalid foods.*

The Honorary General Secretary informed the house about some letters having been received from manufacturers and/or distributors of certain infant and invalid foods and surgical instruments etc. re: drastic restrictions of import under the new import policy to conserve foreign exchange. He also stated that some State Branches have written to the Central Office about the difficulties being experienced with the import of laboratory chemicals and Radiological materials and equipments.

As the matter required consideration of the general import policy of the Government of India regarding invalid foods, medical and surgical appliances, medicines etc. it was decided to send the information to the State/Territorial Branches and to forward the replies received, to the Sub-Committee comprising of :—

1. Dr. H. N. Shivapuri (Lucknow).
2. Dr. A. P. Mittra (Delhi).
3. Dr. C. Suryanarayanamurthy (Andhra).

The sub-Committee was requested to submit its report at the next meeting of the Working Committee for final decision in the matter.

25. *Consideration of policy re: publication of Journals, Bulletins or News Letters by Branches.*

The Honorary General Secretary read out a letter from the Rajasthan State Branch, I.M.A. and the reply sent by the Central Office in the light of the Resolution of the Working Committee passed at its meeting held at Amritsar in December, 1945 in which the Working Committee had disapprovevd of the publication of separate journals by branches.

After the discussion in which Dr. A. P. Mittra (Delhi), Dr. Chamanlal M. Mehta (Bombay), Dr. P. C. Bhatla (Delhi), Dr. R. C. Goulatia (Delhi), Dr. C. Suryanarayanamurthy (Andhra) took part. The Working Committee decided to obtain information from all branches which were publishing separate scientific journals ignoring the resolution of the Working Committee, and to discuss the matter again at the next meeting of the Working Committee.

26. *Any other business with the permission of the President.*

(1) *Letter dated 16-4-57 from the Hony. Secretary, Madras City Branch, I.M.A.*

A letter from the Madras City Branch was read out seeking instructions from the Working Committee whether to suply the list of members to the Income-tax authorities or not, if a branch be requested to do so.

It was decided that the list could be supplied against charges, if any, to the Income-tax authorities. It was also decided to consult the Honorary Legal Adviser in the matter for further advice.

(2) *Letter dated 4-2-57 from the Medical Director, National Institute of Public Health, Los Angeles, California, U.S.A.*

Regarding the letter from the National Institute of Medical Health, Los Angeles, California, U.S.A. on the subject of information for advanced study in Tropical Medicine, it was decided to refer the matter to the Ministry of Health, Government of India and the Medical Council of India for the necessary information required.

(3) *Scheme of Health Insurance in the City of Lucknow —Letter from the U.P. State Branch, I.M.A.*

The letter from the U.P. State Branch regarding Voluntary Contributory Health Scheme in U.P. under the auspices of the Municipality was read out.

Dr. Shivapuri (Lucknow) explained the provisional details of the Scheme to be run on 'no profit no loss' basis for the 'upto Rs. 400/- per month Income group', with only consultation charges being paid to the panel doctor @ Rs. 5/- per head per year, medicines being distributed by the Municipality from a Central source.

As the scheme had not yet been finalised, Dr. Shivapuri was requested by the Working Committee to send a draft of the finalised scheme, when available to the Employees' State Insurance Corporation Standing Committee of the I.M.A. for opinion and also to the Central Office. If found suitable, the scheme could also be adopted for rendering medical services to the employees of the Insurance Corporation.

(4) *Correspondence about the membership of Dr. A. Lakshmipathi of Trivandrum.*

Regarding letters from Madras and Travancore and Cochin State Branches about the membership of Dr. A. Lakshmipathi, it was decided to collect the necessary information regarding the qualifications, registration etc. of Dr. Lakshmipathi, before taking any action in the matter, and Dr. C. Nathamuni Naidu (Madras) was requested to help in the matter.

(5) *All-India Industrial Tribunal (Bank Disputes) Award.*

Dr. H. N. Shivapuri (Lucknow) informed the house about the Industrial Tribunal (Bank Disputes) award in U.P. and the necessity of authenticating the bill from any doctor, vaid or homeopath, by the official bank doctor and the discharge of the services of the one of the doctors in not complying with the same.

Dr. Shivapuri was requested to send the necessary details of the matter to the Central Office for necessary action in the matter.

ACKNOWLEDGEMENTS

The following resolution was proposed from the Chair and passed unanimously :—

1. This meeting of the Working Committee of the Indian Medical Association places on record its deep appreciation and thanks for the hospitality and courtesy accorded to its members on the occasion of the meeting held on 20th and 21st April, 1957, by :—

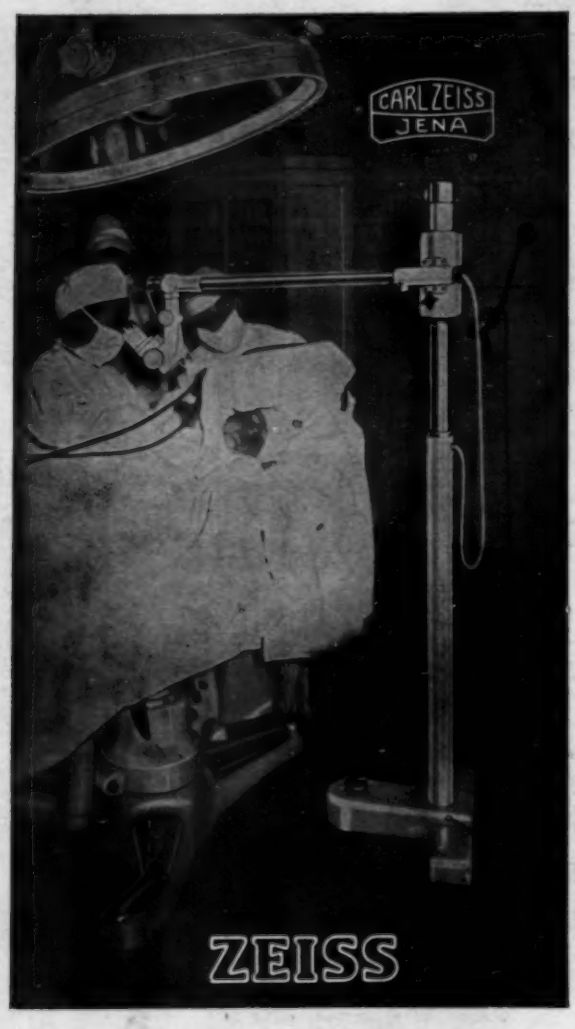
1. The Patna Branch, I.M.A.
2. The Bihar State Branch, I.M.A.
3. The Director of Health Services, Bihar.
4. The Mayor of the Corporation of Patna.

The members of the Working Committee heartily congratulated the Bihar State Branch and the Patna Branch for the fine Medical Association Building which had been constructed. This centre of the Association in the State would be a matter of pride and go a long way towards consolidating the activities of the I.M.A.

With a vote of thanks to the Chair, the meeting came to an end.

C. S. THAKAR,
President.

A. P. MITTRA,
Honorary General Secretary.



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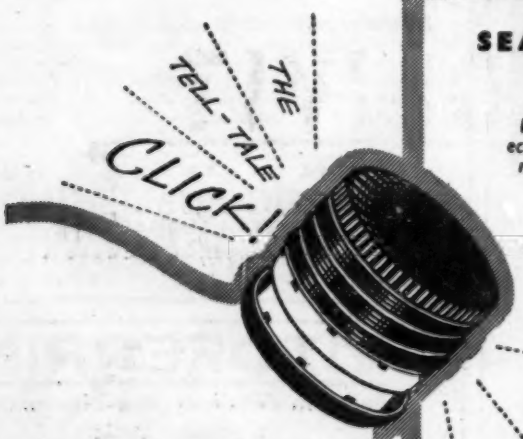

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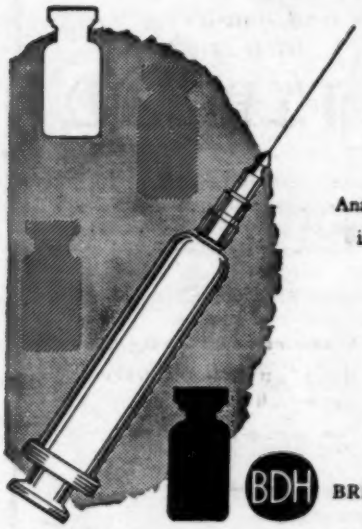

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